Exhibit No. 1

INVITAE CORPORATION
AT-WILL EMPLOYMENT, CONFIDENTIAL INFORMATION, INVENTION ASSIGNMENT AND ARBITRATION AGREEMENT

As a condition of my employment (with the term "**employment**" or any derivation such as "**employ**," as used herein, to include any consulting or independent contractor relationship) with Invitae, Inc., its subsidiaries, affiliates, successors or assigns (together, the "**Company**"), and in consideration of my employment with the Company and my receipt of the compensation now and hereafter paid to me by Company, I agree to the following provisions of this Invitae Corporation At-Will Employment, Confidential Information, Invention Assignment and Arbitration Agreement (this "**Agreement**"):

1. AT-WILL EMPLOYMENT

I UNDERSTAND AND ACKNOWLEDGE THAT MY EMPLOYMENT WITH THE COMPANY IS FOR NO SPECIFIED TERM AND CONSTITUTES "AT-WILL" EMPLOYMENT. I ALSO UNDERSTAND THAT ANY REPRESENTATION TO THE CONTRARY IS UNAUTHORIZED AND NOT VALID UNLESS IN WRITING AND SIGNED BY THE PRESIDENT OR CEO OF INVITAE, INC. ACCORDINGLY, I ACKNOWLEDGE THAT MY EMPLOYMENT RELATIONSHIP MAY BE TERMINATED AT ANY TIME, WITH OR WITHOUT GOOD CAUSE OR FOR ANY OR NO CAUSE, AT MY OPTION OR AT THE OPTION OF THE COMPANY, WITH OR WITHOUT NOTICE. I FURTHER ACKNOWLEDGE THAT THE COMPANY MAY MODIFY JOB TITLES, SALARIES, AND BENEFITS FROM TIME TO TIME AS IT DEEMS NECESSARY.

2. CONFIDENTIALITY

A. *Definition of Confidential Information*. I understand that "**Company Confidential Information**" means information that the Company has or will develop, acquire, create, compile, discover or own, that has value in or to the Company's business which is not generally known and which the Company wishes to maintain as confidential. Company Confidential Information includes both information disclosed by the Company to me, and information developed or learned by me during the course of my employment with Company. Company Confidential Information also includes all information of which the unauthorized disclosure could be detrimental to the interests of Company, whether or not such information is identified as Company Confidential Information. By example, and without limitation, Company Confidential Information includes any and all non-public information that relates to the actual or anticipated business and/or products, research or development of the Company, or to the Company's technical data, trade secrets, or know-how, including, but not limited to, research, product plans, or other information regarding the Company's products or services and markets therefor, customer lists and customers (including, but not limited to, customers of the Company on which I called or with which I may become acquainted during the term of my employment), software, developments, inventions, processes, formulas, technology, designs, drawings, engineering, hardware configuration information, marketing, finances, and other business information disclosed by the Company either directly or indirectly in writing, orally or by drawings or inspection of premises, parts, equipment, or other Company property. Notwithstanding the foregoing, Company Confidential Information shall not include any such information which I can establish (i) was publicly known or made generally available prior to the time of disclosure by Company to me; (ii) becomes publicly known or made generally available after disclosure by Company to me through no wrongful action or omission by me; or

(iii) is in my rightful possession, without confidentiality obligations, at the time of disclosure by Company as shown by my then-contemporaneous written records. I understand that nothing in this Agreement is intended to limit employees' rights to discuss the terms, wages, and working conditions of their employment, as protected by applicable law.

B. *Nonuse and Nondisclosure*. I agree that during and after my employment with the Company, I will hold in the strictest confidence, and take all reasonable precautions to prevent any unauthorized use or disclosure of Company Confidential Information, and I will not (i) use the Company Confidential Information for any purpose whatsoever other than for the benefit of the Company in the course of my employment, or (ii) disclose the Company Confidential Information to any third party without the prior written authorization of the President, CEO, or the Board of Directors of the Company. Prior to disclosure when compelled by applicable law; I shall provide prior written notice to the President, CEO, and General Counsel of Invitae, Inc. (as applicable). I agree that I obtain no title to any Company Confidential Information, and that as between Company and myself, Invitae, Inc. retains all Confidential Information as the sole property of Invitae, Inc. I understand that my unauthorized use or disclosure of Company Confidential Information during my employment may lead to disciplinary action, up to and including immediate termination and legal action by the Company. I understand that my obligations under this **Section 2.B** shall continue after termination of my employment.

C. *Former Employer Confidential Information*. I agree that during my employment with the Company, I will not improperly use, disclose, or induce the Company to use any proprietary information or trade secrets of any former employer or other person or entity with which I have an obligation to keep in confidence. I further agree that I will not bring onto the Company's premises or transfer onto the Company's technology systems any unpublished document, proprietary information, or trade secrets belonging to any such third party unless disclosure to, and use by, the Company has been consented to in writing by such third party.

D. *Third Party Information*. I recognize that the Company has received and in the future will receive from third parties associated with the Company, e.g., the Company's customers, suppliers, licensors, licensees, partners, or collaborators ("**Associated Third Parties**"), their confidential or proprietary information ("**Associated Third Party Confidential Information**") subject to a duty on the Company's part to maintain the confidentiality of such Associated Third Party Confidential Information and to use it only for certain limited purposes. By way of example, Associated Third Party Confidential Information may include the habits or practices of Associated Third Parties, the technology of Associated Third Parties, requirements of Associated Third Parties, and information related to the business conducted between the Company and such Associated Third Parties. I agree at all times during my employment with the Company and thereafter, that I owe the Company and its Associated Third Parties a duty to hold all such Associated Third Party Confidential Information in the strictest confidence, and not to use it or to disclose it to any person, firm, corporation, or other third party except as necessary in carrying out my work for the Company consistent with the Company's agreement with such Associated Third Parties. I further agree to comply with any and all Company policies and guidelines that may be adopted from time to time regarding Associated Third Parties and Associated Third Party Confidential Information. I understand that my unauthorized use or disclosure of Associated Third Party Confidential Information or violation of any Company policies during my employment may lead to disciplinary action, up to and including immediate termination and legal action by the Company.

3. OWNERSHIP

A. *Assignment of Inventions*. As between Company and myself, I agree that all right, title, and interest in and to any and all copyrightable material, notes, records, drawings, designs, inventions, improvements, developments, discoveries and trade secrets conceived, discovered, authored, invented, developed or reduced to practice by me, solely or in collaboration with others, during the period of time I am in the employ of the Company (including during my off-duty hours), or with the use of Company's equipment, supplies, facilities, or Company Confidential Information, and any copyrights, patents, trade secrets, mask work rights or other intellectual property rights relating to the foregoing, except as provided in **Section 3.G** below (collectively, "**Inventions**"), are the sole property of Invitae, Inc. I also agree to promptly make full written disclosure to Invitae, Inc. of any Inventions, and to deliver and assign and hereby irrevocably assign fully to Invitae, Inc. all of my right, title and interest in and to Inventions. I agree that this assignment includes a present conveyance to Invitae, Inc. of ownership of Inventions that are not yet in existence. I further acknowledge that all original works of authorship that are made by me (solely or jointly with others) within the scope of and during the period of my employment with the Company and that are protectable by copyright are "works made for hire," as that term is defined in the United States Copyright Act. I understand and agree that the decision whether or not to commercialize or market any Inventions is within the Company's sole discretion and for the Company's sole benefit, and that no royalty or other consideration will be due to me as a result of the Company's efforts to commercialize or market any such Inventions.

B. *Pre-Existing Materials*. I have attached hereto as Exhibit A, a list describing all inventions, discoveries, original works of authorship, developments, improvements, trade secrets and other proprietary information or intellectual property rights owned by me or in which I have an interest prior to, or separate from, my employment with the Company and which are subject to California Labor Code Section 2870 **(**attached hereto as Exhibit B), and which relate to the Company's proposed business, products, or research and development ("**Prior Inventions**"); or, if no such list is attached, I represent and warrant that there are no such Prior Inventions. Furthermore, I represent and warrant that if any Prior Inventions are included on Exhibit A, they will not materially affect my ability to perform all obligations under this Agreement. I will inform Invitae, Inc. in writing before incorporating such Prior Inventions into any Invention or otherwise utilizing such Prior Invention in the course of my employment with the Company, and the Company is hereby granted a nonexclusive, royalty-free, perpetual, irrevocable, transferable worldwide license (with the right to grant and authorize sublicenses) to make, have made, use, import, offer for sale, sell, reproduce, distribute, modify, adapt, prepare derivative works of, display, perform, and otherwise exploit such Prior Inventions, without restriction, including, without limitation, as part of or in connection with such Invention, and to practice any method related thereto. I will not incorporate any invention, improvement, development, concept, discovery, work of authorship or other proprietary information owned by any third party into any Invention without Invitae, Inc.'s prior written permission.

C. *Moral Rights*. Any assignment to Invitae, Inc. of Inventions includes all rights of attribution, paternity, integrity, modification, disclosure and withdrawal, and any other rights throughout the world that may be known as or referred to as "moral rights," "artist's rights," "droit moral," or the like (collectively, "**Moral Rights**"). To the extent that Moral Rights cannot be assigned under applicable law, I hereby waive and agree not to enforce any and all Moral Rights, including, without limitation, any limitation on subsequent modification, to the extent permitted under applicable law.

D. *Maintenance of Records*. I agree to keep and maintain adequate, current, accurate, and authentic written records of all Inventions made by me (solely or jointly with others) during the term of my employment with the Company. The records will be in the form of notes, sketches, drawings, electronic files, reports, or any other format that may be specified by the Company. As between Company and myself, the records are and will be available to and remain the sole property of Invitae, Inc. at all times.

E. *Further Assurances*. I agree to assist the Company, or its designee, at the Company's expense, in every proper way to secure the Company's rights in the Inventions in any and all countries, including the disclosure to the Company of all pertinent information and data with respect thereto, the execution of all applications, specifications, oaths, assignments, and all other instruments that the Company shall deem proper or necessary in order to apply for, register, obtain, maintain, defend, and enforce such rights, and in order to deliver, assign and convey to the Company, its successors, assigns, and nominees the sole and exclusive rights, title, and interest in and to all Inventions, and testifying in a suit or other proceeding relating to such Inventions. I further agree that my obligations under this **Section 3.E** shall continue after the termination of this Agreement.

F. *Attorney-in-Fact*. I agree that, if the Company is unable because of my unavailability, mental or physical incapacity, or for any other reason to secure my signature with respect to any Inventions, including, without limitation, for the purpose of applying for or pursuing any application for any United States or foreign patents or mask work or copyright registrations covering the Inventions assigned to Invitae, Inc. in **Section 3.A**, then I hereby irrevocably designate and appoint the Company and its duly authorized officers and agents as my agent and attorney-in-fact, to act for and on my behalf to execute and file any papers and oaths, and to do all other lawfully permitted acts with respect to such Inventions to further the prosecution and issuance of patents, copyright and mask work registrations with the same legal force and effect as if executed by me. This power of attorney shall be deemed coupled with an interest, and shall be irrevocable.

G. *Exception to Assignments*. I UNDERSTAND THAT THE PROVISIONS OF THIS AGREEMENT REQUIRING ASSIGNMENT OF INVENTIONS TO INVITAE, INC. DO NOT APPLY TO ANY INVENTION THAT QUALIFIES FULLY UNDER THE PROVISIONS OF CALIFORNIA LABOR CODE SECTION 2870 (ATTACHED HERETO AS EXHIBIT B). I WILL ADVISE INVITAE, INC. PROMPTLY IN WRITING OF ANY INVENTIONS THAT I BELIEVE MEET THE CRITERIA IN CALIFORNIA LABOR CODE SECTION 2870 AND ARE NOT OTHERWISE DISCLOSED ON EXHIBIT A.

4. CONFLICTING OBLIGATIONS

A. *Current Obligations.* I agree that during the term of my employment with the Company, I will not engage in or undertake any other employment, occupation, consulting relationship, or commitment that is directly related to the business in which the Company is now involved or becomes involved or has plans to become involved, nor will I engage in any other activities that conflict with my obligations to the Company.

B. *Prior Relationships*. Without limiting **Section 4.A**, I represent and warrant that I have no other agreements, relationships, or commitments to any other person or entity that conflict with the provisions of this Agreement, my obligations to the Company under this Agreement, or my ability to become employed and perform the services for which I am being

hired by the Company. I further agree that if I have signed a confidentiality agreement or similar type of agreement with any former employer or other entity, I will comply with the terms of any such agreement to the extent that its terms are lawful under applicable law. I represent and warrant that after undertaking a careful search (including searches of my computers, cell phones, electronic devices, and documents), I have returned all property and confidential information belonging to all prior employers (and/or other third parties I have performed services for in accordance with the terms of my applicable agreement). Moreover, I agree to fully indemnify the Company, its directors, officers, agents, employees, investors, shareholders, administrators, affiliates, divisions, subsidiaries, predecessor and successor corporations, and assigns for all verdicts, judgments, settlements, and other losses incurred by any of them resulting from my breach of my obligations under any agreement with a third party to which I am a party or obligation to which I am bound, as well as any reasonable attorneys' fees and costs if the plaintiff is the prevailing party in such an action, except as prohibited by law.

5. RETURN OF COMPANY MATERIALS

Upon separation from employment with the Company, on Company's earlier request during my employment, or at any time subsequent to my employment upon demand from the Company, I will immediately deliver to Invitae, Inc., and will not keep in my possession, recreate, or deliver to anyone else, any and all Company property, including, but not limited to, Company Confidential Information, Associated Third Party Confidential Information, all devices and equipment belonging to the Company (including computers, handheld electronic devices, telephone equipment, and other electronic devices), all tangible embodiments of the Inventions, all electronically stored information and passwords to access such property, Company credit cards, records, data, notes, notebooks, reports, files, proposals, lists, correspondence, specifications, drawings, blueprints, sketches, materials, photographs, charts, any other documents and property, and reproductions of any of the foregoing items, including, without limitation, those records maintained pursuant to **Section 3.D**. I also consent to an exit interview to confirm my compliance with this **Article 5**.

6. TERMINATION CERTIFICATION

Upon separation from employment with the Company, I agree to immediately sign and deliver to the Company the "Termination Certification" attached hereto as Exhibit C. I also agree to keep Invitae, Inc. advised of my home and business address for a period of three (3) years after termination of my employment with the Company, so that the Company can contact me regarding my continuing obligations provided by this Agreement.

7. NOTIFICATION OF NEW EMPLOYER

In the event that I leave the employ of the Company, I hereby grant consent to notification by the Company to my new employer about my obligations under this Agreement.

8. SOLICITATION OF EMPLOYEES

To the fullest extent permitted under applicable law, I agree that during my employment and for a period of twelve (12) months immediately following the termination of my relationship with the Company for any reason, whether voluntary or involuntary, with or without cause, I will not directly or indirectly solicit any of the Company's employees to leave their employment at

the Company. I agree that nothing in this **Article 8** shall affect my continuing obligations under this Agreement during and after this twelve (12) month period, including, without limitation, my obligations under **Article 2**.

9. CONFLICT OF INTEREST GUIDELINES

I agree to diligently adhere to all policies of the Company, including the Company's insider trading policies and the Company's Conflict of Interest Guidelines. A copy of the Company's current Conflict of Interest Guidelines is attached as Exhibit D hereto, but I understand that these Conflict of Interest Guidelines may be revised from time to time during my employment.

10. REPRESENTATIONS

Without limiting my obligations under **Section 3.E** above, I agree to execute any proper oath or verify any proper document required to carry out the terms of this Agreement. I represent and warrant that my performance of all the terms of this Agreement will not breach any agreement to keep in confidence information acquired by me in confidence or in trust prior to my employment by the Company. I hereby represent and warrant that I have not entered into, and I will not enter into, any oral or written agreement in conflict herewith.

11. AUDIT

I acknowledge that I have no reasonable expectation of privacy in any computer, technology system, email, handheld device, telephone, voicemail, or documents that are used to conduct the business of the Company. All information, data, and messages created, received, sent, or stored in these systems are, at all times, the property of the Company. As such, the Company has the right to audit and search all such items and systems, without further notice to me, to ensure that the Company is licensed to use the software on the Company's devices in compliance with the Company's software licensing policies, to ensure compliance with the Company's policies, and for any other business-related purposes in the Company's sole discretion. I understand that I am not permitted to add any unlicensed, unauthorized, or non-compliant applications to the Company's technology systems, including, without limitation, open source or free software not authorized by the Company, and that I shall refrain from copying unlicensed software onto the Company's technology systems or using non-licensed software or websites. I understand that it is my responsibility to comply with the Company's policies governing use of the Company's documents and the internet, email, telephone, and technology systems to which I will have access in connection with my employment.

I am aware that the Company has or may acquire software and systems that are capable of monitoring and recording all network traffic to and from any computer I may use. The Company reserves the right to access, review, copy, and delete any of the information, data, or messages accessed through these systems with or without notice to me and/or in my absence. This includes, but is not limited to, all e-mail messages sent or received, all website visits, all chat sessions, all news group activity (including groups visited, messages read, and postings by me), and all file transfers into and out of the Company's internal networks. The Company further reserves the right to retrieve previously deleted messages from e-mail or voicemail and monitor usage of the Internet, including websites visited and any information I have downloaded. In addition, the Company may review Internet and technology systems activity and analyze

usage patterns, and may choose to publicize this data to assure that technology systems are devoted to legitimate business purposes.

12. ARBITRATION AND EQUITABLE RELIEF

A. *Arbitration*. IN CONSIDERATION OF MY EMPLOYMENT WITH THE COMPANY, ITS PROMISE TO ARBITRATE ALL EMPLOYMENT-RELATED DISPUTES, AND MY RECEIPT OF THE COMPENSATION, PAY RAISES, AND OTHER BENEFITS PAID TO ME BY THE COMPANY, AT PRESENT AND IN THE FUTURE, I AGREE THAT ANY AND ALL CONTROVERSIES, CLAIMS, OR DISPUTES WITH ANYONE (INCLUDING THE COMPANY AND ANY EMPLOYEE, OFFICER, DIRECTOR, SHAREHOLDER, OR BENEFIT PLAN OF THE COMPANY, IN THEIR CAPACITY AS SUCH OR OTHERWISE), ARISING OUT OF, RELATING TO, OR RESULTING FROM MY EMPLOYMENT WITH THE COMPANY OR THE TERMINATION OF MY EMPLOYMENT WITH THE COMPANY, INCLUDING ANY BREACH OF THIS AGREEMENT, SHALL BE SUBJECT TO BINDING ARBITRATION UNDER THE ARBITRATION RULES SET FORTH IN CALIFORNIA CODE OF CIVIL PROCEDURE SECTION 1280 THROUGH 1294.2, INCLUDING SECTION 1281.8 (THE "**ACT**"), AND PURSUANT TO CALIFORNIA LAW. THE FEDERAL ARBITRATION ACT SHALL CONTINUE TO APPLY WITH FULL FORCE AND EFFECT NOTWITHSTANDING THE APPLICATION OF PROCEDURAL RULES SET FORTH IN THE ACT. **DISPUTES THAT I AGREE TO ARBITRATE, AND THEREBY AGREE TO WAIVE ANY RIGHT TO A TRIAL BY JURY, INCLUDE ANY STATUTORY CLAIMS UNDER LOCAL, STATE, OR FEDERAL LAW, INCLUDING, BUT NOT LIMITED TO, CLAIMS UNDER TITLE VII OF THE CIVIL RIGHTS ACT OF 1964, THE AMERICANS WITH DISABILITIES ACT OF 1990, THE AGE DISCRIMINATION IN EMPLOYMENT ACT OF 1967, THE OLDER WORKERS BENEFIT PROTECTION ACT, THE SARBANES-OXLEY ACT, THE WORKER ADJUSTMENT AND RETRAINING NOTIFICATION ACT, THE CALIFORNIA FAIR EMPLOYMENT AND HOUSING ACT, THE FAMILY AND MEDICAL LEAVE ACT, THE CALIFORNIA FAMILY RIGHTS ACT, THE CALIFORNIA LABOR CODE, CLAIMS OF HARASSMENT, DISCRIMINATION, AND WRONGFUL TERMINATION, AND ANY STATUTORY OR COMMON LAW CLAIMS.** I FURTHER UNDERSTAND THAT THIS AGREEMENT TO ARBITRATE ALSO APPLIES TO ANY DISPUTES THAT THE COMPANY MAY HAVE WITH ME.

B. *Procedure*. I AGREE THAT ANY ARBITRATION WILL BE ADMINISTERED BY JAMS, INC. ("**JAMS**"), PURSUANT TO ITS EMPLOYMENT ARBITRATION RULES & PROCEDURES (THE "**JAMS RULES**"). I AGREE THAT THE ARBITRATOR SHALL HAVE THE POWER TO DECIDE ANY MOTIONS BROUGHT BY ANY PARTY TO THE ARBITRATION, INCLUDING MOTIONS FOR SUMMARY JUDGMENT AND/OR ADJUDICATION, AND MOTIONS TO DISMISS AND DEMURRERS, PRIOR TO ANY ARBITRATION HEARING. I AGREE THAT THE ARBITRATOR SHALL ISSUE A WRITTEN DECISION ON THE MERITS. I ALSO AGREE THAT THE ARBITRATOR SHALL HAVE THE POWER TO AWARD ANY REMEDIES AVAILABLE UNDER APPLICABLE LAW, AND THAT THE ARBITRATOR SHALL AWARD ATTORNEYS' FEES AND COSTS TO THE PREVAILING PARTY, EXCEPT AS PROHIBITED BY LAW. I AGREE THAT THE DECREE OR AWARD RENDERED BY THE ARBITRATOR MAY BE ENTERED AS A FINAL AND BINDING JUDGMENT IN ANY COURT HAVING JURISDICTION THEREOF. I UNDERSTAND THAT THE COMPANY WILL PAY FOR ANY ADMINISTRATIVE OR HEARING FEES CHARGED

BY THE ARBITRATOR OR JAMS EXCEPT THAT I SHALL PAY ANY FILING FEES ASSOCIATED WITH ANY ARBITRATION THAT I INITIATE, BUT ONLY SO MUCH OF THE FILING FEES AS I WOULD HAVE INSTEAD PAID HAD I FILED A COMPLAINT IN A COURT OF LAW. I AGREE THAT THE ARBITRATOR SHALL ADMINISTER AND CONDUCT ANY ARBITRATION IN ACCORDANCE WITH CALIFORNIA LAW, INCLUDING THE CALIFORNIA CODE OF CIVIL PROCEDURE, AND THAT THE ARBITRATOR SHALL APPLY SUBSTANTIVE AND PROCEDURAL CALIFORNIA LAW TO ANY DISPUTE OR CLAIM, WITHOUT REFERENCE TO RULES OF CONFLICT OF LAW. TO THE EXTENT THAT THE JAMS RULES CONFLICT WITH CALIFORNIA LAW, CALIFORNIA LAW SHALL TAKE PRECEDENCE. I AGREE THAT ANY ARBITRATION UNDER THIS AGREEMENT SHALL BE CONDUCTED IN SAN FRANCISCO COUNTY, CALIFORNIA.

C. *Remedy*. EXCEPT AS PROVIDED BY THE ACT AND THIS AGREEMENT, ARBITRATION SHALL BE THE SOLE, EXCLUSIVE, AND FINAL REMEDY FOR ANY DISPUTE BETWEEN ME AND THE COMPANY. ACCORDINGLY, EXCEPT AS PROVIDED FOR BY THE ACT AND THIS AGREEMENT, NEITHER I NOR THE COMPANY WILL BE PERMITTED TO PURSUE COURT ACTION REGARDING CLAIMS THAT ARE SUBJECT TO ARBITRATION.

D. *Administrative Relief*. I UNDERSTAND THAT THIS AGREEMENT DOES NOT PROHIBIT ME FROM PURSUING AN ADMINISTRATIVE CLAIM WITH A LOCAL, STATE, OR FEDERAL ADMINISTRATIVE BODY OR GOVERNMENT AGENCY THAT IS AUTHORIZED TO ENFORCE OR ADMINISTER LAWS RELATED TO EMPLOYMENT, INCLUDING, BUT NOT LIMITED TO, THE DEPARTMENT OF FAIR EMPLOYMENT AND HOUSING, THE EQUAL EMPLOYMENT OPPORTUNITY COMMISSION, THE NATIONAL LABOR RELATIONS BOARD, OR THE WORKERS' COMPENSATION BOARD. THIS AGREEMENT DOES, HOWEVER, PRECLUDE ME FROM PURSUING COURT ACTION REGARDING ANY SUCH CLAIM, EXCEPT AS PERMITTED BY LAW.

E. *Voluntary Nature of Agreement*. I ACKNOWLEDGE AND AGREE THAT I AM EXECUTING THIS AGREEMENT VOLUNTARILY AND WITHOUT ANY DURESS OR UNDUE INFLUENCE BY THE COMPANY OR ANYONE ELSE. I ACKNOWLEDGE AND AGREE THAT I HAVE RECEIVED A COPY OF THE TEXT OF CALIFORNIA LABOR CODE SECTION 2870 IN EXHIBIT B. I FURTHER ACKNOWLEDGE AND AGREE THAT I HAVE CAREFULLY READ THIS AGREEMENT AND THAT I HAVE ASKED ANY QUESTIONS NEEDED FOR ME TO UNDERSTAND THE TERMS, CONSEQUENCES, AND BINDING EFFECT OF THIS AGREEMENT AND FULLY UNDERSTAND IT, INCLUDING THAT ***I AM WAIVING MY RIGHT TO A JURY TRIAL***. FINALLY, I AGREE THAT I HAVE BEEN PROVIDED AN OPPORTUNITY TO SEEK THE ADVICE OF AN ATTORNEY OF MY CHOICE BEFORE SIGNING THIS AGREEMENT.

13. MISCELLANEOUS

A. *Governing Law; Consent to Personal Jurisdiction*. This Agreement will be governed by the laws of the State of California without regard to California's conflicts of law rules that may result in the application of the laws of any jurisdiction other than California. To the extent that any lawsuit is permitted under this Agreement, I hereby expressly consent to the personal and exclusive jurisdiction and venue of the state and federal courts located in California for any lawsuit filed against me by the Company.

B. *Assignability*. This Agreement will be binding upon my heirs, executors, assigns, administrators, and other legal representatives, and will be for the benefit of the Company, its successors, and its assigns. There are no intended third-party beneficiaries to this Agreement, except as may be expressly otherwise stated. Notwithstanding anything to the contrary herein, Invitae, Inc. may assign this Agreement and its rights and obligations under this Agreement to any successor to all or substantially all of Invitae, Inc.'s relevant assets, whether by merger, consolidation, reorganization, reincorporation, sale of assets or stock, or otherwise.

C. *Entire Agreement*. This Agreement, together with the Exhibits herein and any executed written offer letter between me and the Company, to the extent such materials are not in conflict with this Agreement, sets forth the entire agreement and understanding between the Company and me with respect to the subject matter herein and supersedes all prior written and oral agreements, discussions, or representations between us, including, but not limited to, any representations made during my interview(s) or relocation negotiations. I represent and warrant that I am not relying on any statement or representation not contained in this Agreement. Any subsequent change or changes in my duties, salary, or compensation will not affect the validity or scope of this Agreement.

D. *Headings*. Headings are used in this Agreement for reference only and shall not be considered when interpreting this Agreement.

E. *Severability*. If a court or other body of competent jurisdiction finds, or the Parties mutually believe, any provision of this Agreement, or portion thereof, to be invalid or unenforceable, such provision will be enforced to the maximum extent permissible so as to effect the intent of the Parties, and the remainder of this Agreement will continue in full force and effect.

F. *Modification, Waiver.* No modification of or amendment to this Agreement, nor any waiver of any rights under this Agreement, will be effective unless in a writing signed by the President or CEO of Invitae, Inc. and me. Waiver by Invitae, Inc. of a breach of any provision of this Agreement will not operate as a waiver of any other or subsequent breach.

G. *Survivorship.* The rights and obligations of the parties to this Agreement will survive termination of my employment with the Company.

Date: 1/22/2015

Signature

Adam Rosendorff, MD

Name of Employee (typed or printed)

Witness:

Signature

Jami Breen

Name (typed or printed)

EXHIBIT A

LIST OF PRIOR INVENTIONS
AND ORIGINAL WORKS OF AUTHORSHIP

Title	Date	Identifying Number or Brief Description

___ No inventions or improvements

___ Additional Sheets Attached

Date: _____

_____
Signature

_____
Name of Employee (typed or printed)

EXHIBIT B

CALIFORNIA LABOR CODE SECTION 2870
INVENTION ON OWN TIME-EXEMPTION FROM AGREEMENT

"(a) Any provision in an employment agreement which provides that an employee shall assign, or offer to assign, any of his or her rights in an invention to his or her employer shall not apply to an invention that the employee developed entirely on his or her own time without using the employer's equipment, supplies, facilities, or trade secret information except for those inventions that either:

(1) Relate at the time of conception or reduction to practice of the invention to the employer's business, or actual or demonstrably anticipated research or development of the employer; or

(2) Result from any work performed by the employee for the employer.

(b) To the extent a provision in an employment agreement purports to require an employee to assign an invention otherwise excluded from being required to be assigned under subdivision (a), the provision is against the public policy of this state and is unenforceable."

EXHIBIT C

INVITAE CORPORATION TERMINATION CERTIFICATION

This is to certify that I do not have in my possession, nor have I failed to return, any devices, records, data, notes, reports, proposals, lists, correspondence, specifications, drawings, blueprints, sketches, materials, equipment, any other documents or property, or reproductions of any and all aforementioned items belonging to Invitae, Inc., its subsidiaries, affiliates, successors or assigns (together, the "**Company**").

I further certify that I have complied with all the terms of the Company's At-Will Employment, Confidential Information, Invention Assignment, and Arbitration Agreement signed by me, including the reporting of any inventions and original works of authorship (as defined therein) conceived or made by me (solely or jointly with others), as covered by that agreement.

I further agree that, in compliance with the At-Will Employment, Confidential Information, Invention Assignment, and Arbitration Agreement, I will preserve as confidential all Company Confidential Information and Associated Third Party Confidential Information, including trade secrets, confidential knowledge, data, or other proprietary information relating to products, processes, know-how, designs, formulas, developmental or experimental work, computer programs, databases, other original works of authorship, customer lists, business plans, financial information, or other subject matter pertaining to any business of the Company or any of its employees, clients, consultants, or licensees.

I also agree that for twelve (12) months from this date, I will not directly or indirectly solicit any of the Company's employees to leave their employment at the Company. I agree that nothing in this paragraph shall affect my continuing obligations under the At-Will Employment, Confidential Information, Invention Assignment, and Arbitration Agreement during and after this twelve (12) month period, including, without limitation, my obligations under **Article 2** (Confidentiality) thereof.

After leaving the Company's employment, I will be employed by _____ in the position of _____.

Date: _____ _____

Signature

_____

Name of Employee (typed or printed)

Address for Notifications: _____

_____

EXHIBIT D

INVITAE CORPORATION CONFLICT OF INTEREST GUIDELINES

It is the policy of Invitae, Inc. to conduct its affairs in strict compliance with the letter and spirit of the law and to adhere to the highest principles of business ethics. Accordingly, all officers, employees, and independent contractors must avoid activities that are in conflict, or give the appearance of being in conflict, with these principles and with the interests of the Company. The following are potentially compromising situations that must be avoided:

1. Revealing confidential information to outsiders or misusing confidential information. Unauthorized divulging of information is a violation of this policy whether or not for personal gain and whether or not harm to the Company is intended. (The At-Will Employment, Confidential Information, Invention Assignment, and Arbitration Agreement elaborates on this principle and is a binding agreement.)

2. Accepting or offering substantial gifts, excessive entertainment, favors, or payments that may be deemed to constitute undue influence or otherwise be improper or embarrassing to the Company.

3. Participating in civic or professional organizations that might involve divulging confidential information of the Company.

4. Initiating or approving personnel actions affecting reward or punishment of employees or applicants where there is a family relationship or is or appears to be a personal or social involvement.

5. Initiating or approving any form of personal or social harassment of employees.

6. Investing or holding outside directorship in suppliers, customers, or competing companies, including financial speculations, where such investment or directorship might influence in any manner a decision or course of action of the Company.

7. Borrowing from or lending to employees, customers, or suppliers.

8. Acquiring real estate of interest to the Company.

9. Improperly using or disclosing to the Company any proprietary information or trade secrets of any former or concurrent employer or other person or entity with whom obligations of confidentiality exist.

10. Unlawfully discussing prices, costs, customers, sales, or markets with competing companies or their employees.

11. Making any unlawful agreement with distributors with respect to prices.

12. Improperly using or authorizing the use of any inventions that are the subject of patent claims of any other person or entity.

13. Engaging in any conduct that is not in the best interest of the Company.

Each officer, employee, and independent contractor must take every necessary action to ensure compliance with these guidelines and to bring problem areas to the attention of higher management for review. Violations of this conflict of interest policy may result in discharge without warning.

Exhibit No. 2

August 28, 2017

Adam Rosendorff
[redacted]
San Francisco, CA 94131

Dear Adam:

This letter sets forth the substance of the separation agreement (the "Agreement") that Invitae Corporation (the "Company") is offering to you to aid in your employment transition.

1. Separation. Your last day of work with the Company and your employment termination date will be Monday, September 11, 2017 (the "Separation Date").

2. Accrued Salary. On the Separation Date, the Company will pay you all accrued salary earned through the Separation Date, subject to standard payroll deductions and withholdings. You are entitled to these payments by law.

3. Severance Payment. Although the Company has no obligation to do so, if you sign this Agreement, allow it to become effective, and comply with your obligations under this Agreement, then the Company will pay you, as severance, the equivalent of 26 weeks of your base salary in effect as of the Separation Date, subject to standard payroll deductions and withholdings. This amount will be paid in a lump sum within ten (10) days after the Effective Date (as defined in Section 14).

4. Health Insurance. To the extent provided by the federal COBRA law or, if applicable, state insurance laws, and by the Company's current group health insurance policies, you will be eligible to continue your group health insurance benefits at your own expense following the Separation Date. Later, you may be able to convert to an individual policy through the provider of the Company's health insurance, if you wish. You will be provided with a separate notice describing your rights and obligations under COBRA.

5. Stock Options. Under the terms of your stock option agreement and the applicable plan documents, vesting of your stock options will cease as of the Separation Date. Your right to exercise any vested shares, and all other rights and obligations with respect to your stock options(s), will be as set forth in your stock option agreement, grant notice and applicable plan documents.

6. Other Compensation or Benefits. You acknowledge that, except as expressly provided in this Agreement, you have not earned and will not receive from the Company any additional compensation (including base salary, bonus, incentive compensation, or equity), severance, or benefits before or after the Separation Date, with the exception of any vested right you may have under the express terms of a written ERISA-qualified benefit plan (e.g., 401(k) account) or any vested options.

7. Expense Reimbursements. You agree that, within ten (10) days of the Separation Date, you will submit your final documented expense reimbursement statement reflecting all business expenses you incurred through the Separation Date, if any, for which you seek reimbursement. The Company will reimburse you for these expenses pursuant to its regular business practice.

8. Return of Company Property. By the close of business on the Separation Date, you agree to return to the Company all Company documents (and all copies thereof) and other Company property which you have in your possession or control, including, but not limited to, Company files, notes, drawings, records, plans, forecasts, reports, studies, analyses, proposals, agreements, financial information, research and development information, sales and marketing information, customer lists, prospect information, pipeline reports, sales reports, operational and personnel information, specifications, code, software, databases, computer-recorded information, tangible property and equipment (including, but not limited to, computers, facsimile machines, mobile telephones, servers), credit cards, entry cards, identification badges and keys; and any materials of any kind which contain or embody any proprietary or confidential information of the Company (and all reproductions thereof in whole or in part). You agree that you will make a diligent search to locate any such documents, property and information by the close of business on the Separation Date. If you have used any personally owned computer, server, or e-mail system to receive, store, review, prepare or transmit any Company confidential or proprietary data, materials or information, within fifteen (15) business days after the Separation Date, you shall provide the Company with a computer-useable copy of such information and then permanently delete and expunge such Company confidential or proprietary information from those systems; and you agree to provide the Company access to your system as requested to verify that the necessary copying and/or deletion is done. Your timely compliance with this paragraph is a condition precedent to your receipt of the severance benefits provided under this Agreement.

9. Proprietary Information Obligations. You acknowledge and reaffirm your continuing obligations under your Proprietary Information and Inventions Agreement, a copy of which is attached hereto as Exhibit A.

10. Confidentiality. The provisions of this Agreement will be held in strictest confidence by you and will not be publicized or disclosed by you in any manner whatsoever; *provided, however,* that: (a) you may disclose this Agreement in confidence to your immediate family and to your attorneys, accountants, tax preparers and financial advisors; and (b) you may disclose this Agreement insofar as such disclosure may be necessary to enforce its terms or as otherwise required by law. In particular, and without limitation, you agree not to disclose the terms of this Agreement to any current or former Company employee.

11. Nondisparagement. You agree not to disparage the Company, its officers, directors, employees, shareholders, and agents, in any manner likely to be harmful to its or their its business, business reputation, or personal reputation; provided that you will respond accurately and fully to any question, inquiry or request for information when required by legal process.

12. No Admissions. You understand and agree that the promises and payments in consideration of this Agreement shall not be construed to be an admission of any liability or obligation by the Company to you or to any other person, and that the Company makes no such admission.

13. Release of Claims. In exchange for the consideration under this Agreement to which you would not otherwise be entitled, you hereby generally and completely release the Company and its directors, officers, employees, shareholders, partners, agents, attorneys, predecessors, successors, parent and subsidiary entities, insurers, affiliates, and assigns from any and all claims, liabilities and obligations, both known and unknown, that arise out of or are in any way related to events, acts, conduct, or omissions occurring at any time prior to and including the date you sign this Agreement. This general release includes, but is not limited to: (a) all claims arising out of or in any way related to your employment with the Company or the termination of that employment; (b) all claims related to your compensation or benefits from the Company, including salary, bonuses, commissions, vacation pay, expense reimbursements, severance pay, fringe benefits, stock, stock options, or any other ownership interests in the Company; (c) all claims for breach of contract, wrongful termination, and breach of the implied covenant of good faith and fair dealing; (d) all tort claims, including claims for fraud, defamation, emotional distress, and discharge in violation of public policy; and (e) all federal, state, and local statutory claims, including claims for discrimination, harassment, retaliation, attorneys' fees, or other claims arising under the federal Civil Rights Act of 1964 (as amended), the federal Americans with Disabilities Act of 1990, the California Labor Code (as amended), the California Family Rights Act, the Age Discrimination in Employment Act ("ADEA") and the California Fair Employment and Housing Act (as amended). Notwithstanding the foregoing, you are not releasing the Company hereby from any obligation to indemnify you pursuant to the Articles and Bylaws of the Company, any valid fully executed indemnification agreement with the Company, applicable law, or applicable directors and officers liability insurance. Also, excluded from this Agreement are any claims that cannot be waived by law. You are waiving, however, your right to any monetary recovery should any governmental agency or entity, such as the Equal Employment Opportunity Commission or the Department of Labor, pursue any claims on your behalf. You represent that you have no lawsuits, claims or actions pending in your name, or on behalf of any other person or entity, against the Company or any other person or entity subject to the release granted in this paragraph.

14. ADEA Release. You acknowledge that you are knowingly and voluntarily waiving and releasing any rights you have under the ADEA, and that the consideration given for the waiver and releases you have given in this Agreement is in addition to anything of value to which you were already entitled. You further acknowledge that you have been advised, as required by the ADEA, that: (a) your waiver and release does not apply to any rights or claims that arise after the date you sign this Agreement; (b) you should consult with an attorney prior to signing this Agreement (although you may choose voluntarily not to do so); (c) you have twenty-one (21) days to consider this Agreement (although you may choose voluntarily to sign it sooner); (d) you have seven (7) days following the date you sign this Agreement to revoke this Agreement (in a written revocation sent to me); and (e) this Agreement will not be effective until

the date upon which the revocation period has expired, which will be the eighth day after you sign this Agreement provided that you do not revoke it (the "Effective Date").

15. Section 1542 Waiver. In giving the release herein, which includes claims which may be unknown to you at present, you acknowledge that you have read and understand Section 1542 of the California Civil Code, which reads as follows:

> **"A general release does not extend to claims which the creditor does not know or suspect to exist in his or her favor at the time of executing the release, which if known by him or her must have materially affected his or her settlement with the debtor."**

You hereby expressly waive and relinquish all rights and benefits under that section and any law of any other jurisdiction of similar effect with respect to your release of claims herein, including but not limited to your release of unknown claims.

16. Representations. You hereby represent that you have been paid all compensation owed and for all hours worked, have received all the leave and leave benefits and protections for which you are eligible pursuant to the Family and Medical Leave Act, the California Family Rights Act, or otherwise, and have not suffered any on-the-job injury for which you have not already filed a workers' compensation claim.

17. Miscellaneous. This Agreement, including Exhibit A, constitutes the complete, final and exclusive embodiment of the entire agreement between you and the Company with regard to its subject matter. It is entered into without reliance on any promise or representation, written or oral, other than those expressly contained herein, and it supersedes any other such promises, warranties or representations. This Agreement may not be modified or amended except in a writing signed by both you and a duly authorized officer of the Company. This Agreement will bind the heirs, personal representatives, successors and assigns of both you and the Company, and inure to the benefit of both you and the Company, their heirs, successors and assigns. If any provision of this Agreement is determined to be invalid or unenforceable, in whole or in part, this determination will not affect any other provision of this Agreement and the provision in question will be modified so as to be rendered enforceable. This Agreement will be deemed to have been entered into and will be construed and enforced in accordance with the laws of the State of California without regard to conflict of laws principles. Any ambiguity in this Agreement shall not be construed against either party as the drafter. Any waiver of a breach of this Agreement shall be in writing and shall not be deemed to be a waiver of any successive breach. This Agreement may be executed in counterparts and facsimile signatures will suffice as original signatures.

If this Agreement is acceptable to you, please sign below and return the original to me. You have twenty-one (21) calendar days to decide whether you would like to accept this Agreement, and the Company's offer contained herein will automatically expire if you do not sign and return it within this timeframe.

We wish you the best in your future endeavors.

Sincerely,

By: _____

Sylvia Arifin
Talent Operations

I HAVE READ, UNDERSTAND AND AGREE FULLY TO THE FOREGOING AGREEMENT:

_____

Adam Rosendorff

August 29th, 2017

Date

EXHIBIT A

PROPRIETARY INFORMATION AND INVENTIONS AGREEMENT

Exhibit No. 3

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Form 10-Q

☒ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended September 30, 2021

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from to

Commission File No. 001-36847

Invitae Corporation

(Exact name of the registrant as specified in its charter)

Delaware	**27-1701898**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**

1400 16th Street, San Francisco, California 94103

(Address of principal executive offices, Zip Code)

(415) 374-7782

(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol	Name of exchange on which registered
Common Stock, $0.0001 par value per share	NVTA	New York Stock Exchange

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b 2 of the Exchange Act.

Large accelerated filer ☒ Accelerated filer ☐ Non-accelerated filer ☐ Smaller reporting company ☐ Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

The number of shares of the registrant's common stock outstanding as of October 29, 2021 was 226,370,843.

TABLE OF CONTENTS

PART I - Financial Information

ITEM 1. Condensed Consolidated Financial Statements.

INVITAE CORPORATION

Condensed Consolidated Balance Sheets

(in thousands)
(unaudited)

	September 30, 2021	December 31, 2020
Assets		
Current assets:		
Cash and cash equivalents	$ 921,634	$ 124,794
Marketable securities	320,465	229,186
Accounts receivable	58,431	47,722
Inventory	30,633	32,030
Prepaid expenses and other current assets	34,401	20,200
Total current assets	1,365,564	453,932
Property and equipment, net	101,000	66,102
Operating lease assets	119,194	45,109
Restricted cash	10,275	6,686
Intangible assets, net	1,168,157	981,845
Goodwill	2,283,059	1,863,623
Other assets	23,790	13,188
Total assets	$ 5,071,039	$ 3,430,485
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	$ 35,404	$ 25,203
Accrued liabilities	104,308	86,058
Operating lease obligations	12,636	8,789
Finance lease obligations	3,825	1,695
Total current liabilities	156,173	121,745
Operating lease obligations, net of current portion	120,467	48,357
Finance lease obligations, net of current portion	6,467	3,123
Debt	111,156	104,449
Convertible senior notes, net	1,462,499	283,724
Deferred tax liability	51,378	51,538
Other long-term liabilities	56,182	841,256
Total liabilities	1,964,322	1,454,192
Commitments and contingencies (Note 8)		
Stockholders' equity:		
Common stock	23	19
Accumulated other comprehensive income	21	1
Additional paid-in capital	4,624,397	3,337,120
Accumulated deficit	(1,517,724)	(1,360,847)
Total stockholders' equity	3,106,717	1,976,293
Total liabilities and stockholders' equity	$ 5,071,039	$ 3,430,485

See accompanying notes to unaudited condensed consolidated financial statements.

INVITAE CORPORATION

Condensed Consolidated Statements of Operations

(in thousands, except per share amounts)
(unaudited)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2021	2020	2021	2020
Revenue:				
Test revenue	$ 111,676	$ 67,326	$ 322,448	$ 175,503
Other revenue	2,719	1,402	11,880	3,664
Total revenue	114,395	68,728	334,328	179,167
Cost of revenue	87,741	46,643	252,563	130,017
Research and development	97,511	37,802	284,323	168,433
Selling and marketing	55,501	37,800	163,705	119,440
General and administrative	86,820	27,810	197,640	77,638
Change in fair value of contingent consideration	(19,866)	(504)	(386,836)	4,328
Loss from operations	(193,312)	(80,823)	(177,067)	(320,689)
Other income (expense), net	3,357	(15,771)	9,846	(32,499)
Interest expense	(14,069)	(6,308)	(35,869)	(17,244)
Net loss before taxes	(204,024)	(102,902)	(203,090)	(370,432)
Income tax benefit	(5,848)	-	(29,208)	(2,600)
Net loss	$ (198,176)	$ (102,902)	$ (173,882)	$ (367,832)
Net loss per share, basic and diluted	$ (0.91)	$ (0.78)	$ (0.85)	$ (3.08)
Shares used in computing net loss per share, basic and diluted	218,384	132,484	205,587	119,386

See accompanying notes to unaudited condensed consolidated financial statements.

INVITAE CORPORATION

Condensed Consolidated Statements of Comprehensive Loss

(in thousands)
(unaudited)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2021	2020	2021	2020
Net loss	$ (198,176)	$ (102,902)	$ (173,882)	$ (367,832)
Other comprehensive income (loss):				
Unrealized income (loss) on available-for-sale marketable securities, net of tax	(13)	(373)	20	208
Comprehensive loss	$ (198,189)	$ (103,275)	$ (173,862)	$ (367,624)

See accompanying notes to unaudited condensed consolidated financial statements.

INVITAE CORPORATION

Condensed Consolidated Statements of Stockholders' Equity

(in thousands)
(unaudited)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2021	2020	2021	2020
Common stock:				
Balance, beginning of period	$ 20	$ 13	$ 19	$ 10
Common stock issued	3	-	4	3
Balance, end of period	23	13	23	13
Accumulated other comprehensive income (loss):				
Balance, beginning of period	34	572	1	(9)
Unrealized income (loss) on available-for-sale marketable securities, net of tax	(13)	(373)	20	208
Balance, end of period	21	199	21	199
Additional paid-in capital:				
Balance, beginning of period	3,973,479	1,487,217	3,337,120	1,138,316
Common stock issued in connection with public offering, net	-	-	434,263	217,486
Common stock issued on exercise of stock options, net	5,215	1,992	8,167	4,163
Common stock issued pursuant to exercises of warrants	-	324	1,242	386
Common stock issued pursuant to employee stock purchase plan	-	-	6,400	4,527
Common stock issued or issuable pursuant to acquisitions	620,001	31,939	783,877	134,445
Stock-based compensation expense	25,702	21,376	128,816	53,912
Reclassification of equity component of convertible senior notes	-	-	(75,488)	-
Reclassification of stock payable liabilities	-	-	-	(10,387)
Balance, end of period	4,624,397	1,542,848	4,624,397	1,542,848
Accumulated deficit:				
Balance, beginning of period	(1,319,548)	(1,023,607)	(1,360,847)	(758,677)
Cumulative effect of adoption of ASU 2020-06	-	-	17,005	-
Net loss	(198,176)	(102,902)	(173,882)	(367,832)
Balance, end of period	(1,517,724)	(1,126,509)	(1,517,724)	(1,126,509)
Total stockholders' equity	$ 3,106,717	$ 416,551	$ 3,106,717	$ 416,551

See accompanying notes to unaudited condensed consolidated financial statements.

INVITAE CORPORATION

Condensed Consolidated Statements of Cash Flows

(in thousands)
(unaudited)

	Nine Months Ended September 30,	
	2021	**2020**
Cash flows from operating activities:		
Net loss	$ (173,882)	$ (367,832)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	56,848	22,964
Stock-based compensation	131,768	102,329
Amortization of debt discount and issuance costs	10,352	11,115
Remeasurements of liabilities associated with business combinations	(396,015)	42,448
Benefit from income taxes	(29,215)	(2,600)
Post-combination expense	7,870	-
Other	7,336	(570)
Changes in operating assets and liabilities, net of businesses acquired:		
Accounts receivable	(8,900)	5,516
Inventory	1,397	-
Prepaid expenses and other current assets	(15,273)	(8,460)
Other assets	(2,915)	1,387
Accounts payable	2,581	3,118
Accrued expenses and other long-term liabilities	24,151	5,665
Net cash used in operating activities	(383,897)	(184,920)
Cash flows from investing activities:		
Purchases of marketable securities	(325,957)	(180,021)
Proceeds from sales of marketable securities	-	12,832
Proceeds from maturities of marketable securities	228,043	152,465
Acquisition of businesses, net of cash acquired	(239,836)	(57,576)
Purchases of property and equipment	(35,533)	(13,991)
Other	(1,300)	(2,000)
Net cash used in investing activities	(374,583)	(88,291)
Cash flows from financing activities:		
Proceeds from public offerings of common stock, net	434,263	217,489
Proceeds from issuance of common stock	15,810	9,076
Proceeds from issuance of convertible senior notes, net	1,116,427	-
Finance lease principal payments	(2,833)	(1,543)
Other	(4,758)	3,738
Net cash provided by financing activities	1,558,909	228,760
Net increase (decrease) in cash, cash equivalents and restricted cash	800,429	(44,451)
Cash, cash equivalents and restricted cash at beginning of period	131,480	157,572
Cash, cash equivalents and restricted cash at end of period	$ 931,909	$ 113,121
Supplemental cash flow information of non-cash investing and financing activities:		
Equipment acquired through finance leases	$ 7,736	$ 1,971
Purchases of property and equipment in accounts payable and accrued liabilities	$ 12,513	$ 3,576
Common stock issued for acquisition of businesses	$ 782,477	$ 82,185
Operating lease assets obtained in exchange for lease obligations, net	$ 82,138	$ 6,157

See accompanying notes to unaudited condensed consolidated financial statements.

INVITAE CORPORATION

Notes to Condensed Consolidated Financial Statements

1.
Organization and description of business

Invitae Corporation ("Invitae," “the Company," "we," "us," and "our") was incorporated in the State of Delaware on January 13, 2010, as Locus Development, Inc. and we changed our name to Invitae Corporation in 2012. We offer high-quality, comprehensive, affordable genetic testing across multiple clinical areas, including hereditary cancer, cardiology, neurology, pediatrics, personalized oncology, metabolic conditions and rare diseases. To augment our offering and realize our mission, we have acquired multiple assets and businesses that further expanded our test menu and suite of genome management offerings and accelerated our entry into key genomics markets. Invitae operates in
one segment.

Basis of presentation

The accompanying unaudited condensed consolidated financial statements have been prepared in accordance with U.S. generally accepted accounting principles (“U.S. GAAP”) for interim financial information and in accordance with the instructions to Form 10-Q and Rule 10-01 of Regulation S-X. Accordingly, they do not include all of the information and footnotes required by generally accepted accounting principles for complete financial statements. The unaudited interim condensed consolidated financial statements have been prepared on the same basis as the annual financial statements. In the opinion of management, the accompanying unaudited condensed consolidated financial statements reflect all adjustments (consisting only of normal recurring adjustments) considered necessary for a fair presentation. The information included in this Quarterly Report on Form 10-Q should be read in conjunction with the audited financial statements and notes thereto included in our Annual Report on Form 10-K for the year ended December 31, 2020. The results for the three and nine months ended September 30, 2021 are not necessarily indicative of the results expected for the full fiscal year or any other periods.

2.
Summary of significant accounting policies

Principles of consolidation

Our unaudited condensed consolidated financial statements include our accounts and the accounts of our wholly-owned subsidiaries. All intercompany balances and transactions have been eliminated in consolidation.

Use of estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make judgments, estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent liabilities as of the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. We base these estimates on current facts, historical and anticipated results, trends and various other assumptions that we believe are reasonable under the circumstances, including assumptions as to future events. Actual results could differ materially from those judgments, estimates and assumptions. We evaluate our estimates on an ongoing basis.

Concentrations of credit risk and other risks and uncertainties

Financial instruments that potentially subject us to a concentration of credit risk consist of cash, cash equivalents, restricted cash, marketable securities and accounts receivable. Our cash and cash equivalents are primarily held by financial institutions in the United States. Such deposits may exceed federally insured limits.

Cash, cash equivalents and restricted cash

The following table provides a reconciliation of cash, cash equivalents and restricted cash reported within the consolidated balance sheets that sum to the total of the same amounts shown in the consolidated statements of cash flows (in thousands):

	September 30, 2021	December 31, 2020
Cash and cash equivalents	$ 921,634	$ 124,794
Restricted cash	10,275	6,686
Total cash, cash equivalents and restricted cash	$ 931,909	$ 131,480

The restricted cash is related to security deposits on our leases.

Fair value of financial instruments

Our financial instruments consist principally of cash and cash equivalents, marketable securities, accounts payable, accrued liabilities, finance leases and liabilities associated with business combinations. The carrying amounts of certain of these financial instruments, including cash and cash equivalents, accounts receivable, accounts payable and accrued and other current liabilities approximate their current fair value due to the relatively short-term nature of these accounts. Based on borrowing rates available to us, the carrying value of our finance leases approximate their fair values. Liabilities associated with business combinations are recorded at their estimated fair value.

Prior period reclassifications

We have reclassified certain amounts in prior periods to conform with current presentation. During the current period, we have disclosed the change in fair value of our contingent consideration separately in our statements of operations; these amounts are general and administrative in nature and were disclosed in general and administrative expense previous periods.

Recent accounting pronouncements

We evaluate all Accounting Standards Updates (“ASUs”) issued by the Financial Accounting Standards Board ("FASB") for consideration of their applicability. ASUs not included in the disclosures in this report were assessed and determined to be either not applicable or are not expected to have a material impact on our consolidated financial statements.

Recently adopted accounting pronouncements

In August 2020, the FASB issued ASU 2020-06, *Accounting for Convertible Instruments and Contracts in an Entity's Own Equity*, which simplifies the accounting for certain convertible instruments, amends the guidance on derivative scope exceptions for contracts in an entity's own equity, and modifies the guidance on diluted earnings per share calculations as a result of these changes. This new standard is effective for our interim and annual periods beginning January 1, 2022, and earlier adoption is permitted. We elected to adopt the amendments on a modified retrospective basis effective January 1, 2021, which required a cumulative-effect adjustment to retained earnings. The cumulative-effect adjustment resulted in a decrease in accumulated deficit of $17.0 million related to the reversal of the equity component and associated issuance costs as well as adjustment of the related amortization costs of our existing convertible senior notes due in 2024. Reporting periods beginning on or after January 1, 2021 are presented under this new guidance while prior periods have not been adjusted and continue to be reported in accordance with our historic accounting under GAAP. See further information about our Senior Convertible Notes in Note 8, “Commitments and contingencies.”

3.
Revenue, accounts receivable and deferred revenue

Test revenue is generated from sales of diagnostic tests and precision oncology products to four groups of customers: biopharmaceutical partners, patients who pay directly, patients' insurance carriers, and other business-to-business customers (e.g., hospitals, clinics, medical centers). Test revenue is generated in two ways: through a centralized lab and decentralized through the shipment of reactions to biopharmaceutical partners and other business-to-business customers. We refer to the set of reagents needed to perform a next-generation sequencing test as a "reaction." Amounts billed and collected, and the timing of collections, vary based on the type of payer. Other revenue consists principally of revenue recognized under contracts for biopharmaceutical development services and other collaboration and genome network agreements and is accounted for under the provisions provided in Accounting Standards Codification ("ASC") 606, *Revenue from Contracts with Customers*.

Our revenue as disaggregated by payer category and revenue subtype was as follows (in thousands):

	Three Months Ended September 30, 2021				
	Patient				
	Insurance	Direct	Biopharma partner	Other business-to-business	Total
Test revenue:					
Centralized	$ 69,009	$ 10,999	$ 10,390	$ 12,591	$ 102,989
Decentralized	-	-	374	8,313	8,687
Total test revenue	69,009	10,999	10,764	20,904	111,676
Other revenue	-	-	1,774	945	2,719
Total revenue	$ 69,009	$ 10,999	$ 12,538	$ 21,849	$ 114,395

	Three Months Ended September 30, 2020				
	Patient				
	Insurance	Direct	Biopharma partner	Other business-to-business	Total
Test revenue:					
Centralized	$ 46,932	$ 6,379	$ 5,287	$ 8,728	$ 67,326
Total test revenue	46,932	6,379	5,287	8,728	67,326
Other revenue	-	-	848	554	1,402
Total revenue	$ 46,932	$ 6,379	$ 6,135	$ 9,282	$ 68,728

	Nine Months Ended September 30, 2021				
	Patient				
	Insurance	Direct	Biopharma partner	Other business-to-business	Total
Test revenue:					
Centralized	$ 201,154	$ 30,471	$ 29,650	$ 34,939	$ 296,214
Decentralized	-	-	1,011	25,223	26,234
Total test revenue	201,154	30,471	30,661	60,162	322,448
Other revenue	-	-	8,394	3,486	11,880
Total revenue	$ 201,154	$ 30,471	$ 39,055	$ 63,648	$ 334,328

	Nine Months Ended September 30, 2020				
	Patient				
	Insurance	Direct	Biopharma partner	Other business-to-business	Total
Test revenue:					
Centralized	$ 121,993	$ 16,468	$ 13,887	$ 23,155	$ 175,503
Total test revenue	121,993	16,468	13,887	23,155	175,503
Other revenue	-	-	1,777	1,887	3,664
Total revenue	$ 121,993	$ 16,468	$ 15,664	$ 25,042	$ 179,167

We recognize revenue related to billings based on estimates of the amount that will ultimately be realized. Cash collections for certain tests delivered may differ from rates originally estimated. We update our estimate of the amounts to be recognized based on new information evaluated on a quarterly basis. Updates to our estimates resulted in the following changes to revenue, loss from operations and basic and diluted net loss per share (in millions, except per share amounts):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2021	2020	2021	2020
Revenue	$ 4.0	$ 0.7	$ 12.0	$ 3.0
Loss from operations	$ (4.0)	$ (0.7)	$ (12.0)	$ (3.0)
Net loss per share, basic and diluted	$ (0.02)	$ (0.01)	$ (0.06)	$ (0.03)

Impact of COVID-19

Our billable volumes decreased significantly in the second half of March 2020 as compared to the first few months of 2020 as a result of COVID-19 and related limitations and priorities across the healthcare system. Our daily test volumes have recovered from the low in March 2020, although the current COVID-19 pandemic continues to impact our business operations and practices. While we expect that it may continue to impact our business, we experienced limited disruption during the third quarter of 2021. We have reviewed and adjusted, when necessary, for the impact of COVID-19 on our estimates related to revenue recognition and expected credit losses.

In March 2020, the Coronavirus Aid, Relief, and Economic Security Act ("CARES Act") was signed into law as a stimulus bill intended to bolster the economy, among other things, and provide assistance to qualifying businesses and individuals. The CARES Act included an infusion of funds into the healthcare system; in April 2020, we received $3.8 million as a part of this initiative, and in January 2021, we received an additional $2.3 million. These payments were recognized as other income, net in our consolidated statement of operations in the periods received. At this time, we are not certain of the availability, extent or impact of any future relief provided under the CARES Act.

Accounts receivable

The majority of our accounts receivable represents amounts billed to biopharmaceutical partners and other business-to-business customers for test and other revenue recognized, and estimated amounts to be collected from third-party insurance payers for genetic testing revenue recognized. Also included are amounts due under the terms of collaboration and genome network agreements for diagnostic testing and data aggregation reporting services provided and proprietary platform access rights transferred.

We also record unbilled revenue for revenue recognized but yet to be billed for services provided to biopharmaceutical companies related to companion diagnostic development. This contract receivable was $
3.7 million and $4.3 million as of September 30, 2021 and December 31, 2020, respectively, and was included in prepaid expenses and other current assets on the consolidated balance sheets.

Deferred revenue

We record a contract liability when cash payments are received or due in advance of our performance related to one or more performance obligations. The deferred revenue balance primarily consists of advanced billings for biopharmaceutical development services, including billings at the initiation of performance-based milestones, and recognized as revenue in the applicable future period when the revenue is earned. Also included are prepayments related to our consumer direct channel. During the three and nine months ended September 30, 2021, we recognized revenue from deferred revenue recorded in prior periods of $2.3 million and $2.7 million, respectively.

4.
Business combinations

Singular Bio

In June 2019, we acquired 100% of the fully diluted equity of Singular Bio, Inc. ("Singular Bio"), a privately held company developing single molecule detection technology, for approximately $57.3 million, comprised of $53.9 million in the form of 2.5 million shares of our common stock and the remainder in cash.

In June 2019, we granted approximately $90.0 million of restricted stock units ("RSU") under our 2015 Stock Incentive Plan as inducement awards to new employees who joined Invitae in connection with our acquisition of Singular Bio. $45.0 million of the RSUs are time-based and vested in three equal installments in December 2019, June 2020, and December 2020, subject to the employee's continued service with us ("Time-based RSUs") and $45.0 million of the RSUs are performance-based RSUs ("PRSUs") that vest upon the achievement of certain performance conditions. Since the number of awards granted is based on a 30-day volume weighted-average share price with a fixed dollar value, these Time-based RSUs and PRSUs are liability-classified and the fair value is estimated at each reporting period based on the number of shares that are expected to be issued at each reporting date and our closing stock price, which combined are categorized as Level 3 inputs. Therefore, fair value of these awards and the number of shares issued are not fixed until the awards vest.

During the three and nine months ended September 30, 2021, we recorded research and development stock-based compensation expense of nil related to the Time-based RSUs, and income of $0.7 million and expense of $1.2 million, respectively, related to the PRSUs based on our evaluation of the probability of achieving performance conditions, primarily due to the change in value of our common stock. During the three and nine months ended September 30, 2020, we recorded research and development stock-based compensation expense of $6.3 million and $24.9 million, respectively, related to the Time-based RSUs and $6.5 million and $23.6 million, respectively, related to the PRSUs. As of September 30, 2021, there was no remaining liability related to the Singular Bio transaction.

Jungla

In July 2019, we acquired
100% of the equity interest of Jungla Inc. ("Jungla"), a privately held company developing a platform for molecular evidence testing in genes, for approximately $59.0 million, comprised of $44.9 million in the form of shares of our common stock and the remainder in cash.

We may be required to pay contingent consideration based on achievement of post-closing development milestones. As of the acquisition date, the fair value of this contingent consideration was $10.7 million including cash and common stock. The material factors that may impact the fair value of the contingent consideration, and therefore, this liability, are the probabilities and timing of achieving the related milestones and the discount rate used to estimate the fair value. Significant changes in any of the probabilities of success would result in a significant change in the fair value, which is estimated at each reporting date with changes reflected as a general and administrative expense. The remaining milestone was achieved in July 2021 and the fair value of the contingent consideration was reduced from $3.6 million as of June 30, 2021 to zero as of September 30, 2021.

Diploid

In March 2020, we acquired
100% of the equity interest of Orbicule BV ("Diploid"), a developer of artificial intelligence software capable of diagnosing genetic disorders using sequencing data and patient information, for approximately $82.3 million in cash and shares of our common stock. Of the stock purchase price consideration issued, approximately 0.4 million shares were subject to a hold-back to satisfy indemnification obligations that may arise. In September 2021, the amounts held back to satisfy indemnification obligations for Diploid were released in full to the former shareholders.

Genelex and YouScript

In April 2020, we acquired 100% of the equity interest of Genelex Solutions, LLC ("Genelex") and YouScript Incorporated ("YouScript") to bring pharmacogenetic testing and integrated clinical decision support to Invitae. We acquired Genelex for approximately $13.2 million, primarily in shares of our common stock. Of the stock purchase price consideration issued, approximately 0.1 million shares were subject to a hold-back to satisfy indemnification obligations that may arise. We acquired YouScript for approximately $52.7 million, including cash consideration of $24.5 million and the remainder in shares of our common stock. Of the purchase price consideration for YouScript, approximately $1.4 million and 0.5 million shares of our common stock were subject to a hold-back to satisfy indemnification obligations that may arise.

As of the acquisition date, we recorded stock payable liabilities of $6.2 million to represent the hold-back obligation to issue shares subject to indemnification claims that may arise. These liabilities are adjusted at each reporting period based on the fair value of our common stock, which is a Level 3 input. In April 2021, the amounts held back to satisfy indemnification obligations for Genelex were released in full to the former shareholders. As of September 30, 2021, the value of this liability was $6.5 million related to YouScript with the $1.3 million quarterly change recorded in other income (expense), net.

We may be required to pay contingent consideration in the form of additional shares of our common stock in connection with the acquisition of Genelex if, within a specified period following the closing, we achieve a certain product milestone, in which case we would issue shares of our common stock with a value equal to a portion of the gross revenues actually received by us for a pharmacogenetic product reimbursed through certain payers during an earn-out period of up to four years. As of the acquisition date, the fair value of this contingent consideration was $2.0 million. The material factors that may impact the fair value of the contingent consideration, and therefore, this liability, are the probabilities and timing of achieving the related milestone, the estimated revenues achieved for a pharmacogenetic product and the discount rate used to estimate the fair value. Significant changes in any of the probabilities of success would result in a significant change in the fair value, which is estimated at each reporting date. As of September 30, 2021, the fair value of this contingent consideration was $1.7 million.

ArcherDX

In October 2020, we acquired ArcherDX, Inc. ("ArcherDX"), a genomics analysis company democratizing precision oncology. Under the terms of the agreement, we acquired ArcherDX for upfront consideration consisting of 30.0 million shares of our common stock and $325.0 million in cash, plus up to an additional 27.0 million shares of our common stock payable in connection with the achievement of certain milestones. During the three months ended March 31, 2021, Invitae and the sellers of ArcherDX reached an agreement to reduce the purchase price by $1.2 million based on the final acquired net working capital. This adjustment was recorded during the three months ended March 31, 2021 and reduced the contingent consideration liability and goodwill by approximately $1.2 million.

Our purchase price allocation for the acquisition is preliminary and subject to revision as additional information about fair value of assets and liabilities becomes available, primarily related to our deferred tax liability assumed in connection with the acquisition. Additional information that existed as of the acquisition date but at the time was unknown to us may become known to us during the remainder of the measurement period, a period not to exceed 12 months from the acquisition date.

We may be required to pay contingent consideration based on achievement of post-closing development and revenue milestones. As of the acquisition date, the total fair value of the contingent consideration was $945.2 million. Of the five milestones, one milestone was achieved in November 2020, which resulted in the issuance of 5.0 million shares of our common stock and a cash payment of $1.9 million, and three milestones were achieved or deemed to be achieved during the three months ended June 30, 2021, which resulted in the issuance of 13.8 million shares of our common stock and a cash payment of $3.3 million in July 2021. The remaining milestone is based upon receiving U.S. Food and Drug Administration ("FDA") clearance or approval of STRATAFIDE, which per the terms of the acquisition agreement, must be completed by March 31, 2022, subject to certain extensions (the "ArcherDX Final Milestone"). The material factors that may impact the fair value of the contingent consideration, and therefore the liability, are (i) the estimated number of shares to be issued, (ii) the volatility of our common stock, (iii) the probabilities of achievement of milestones within the timeframes prescribed in the acquisition agreement and (iv) discount rates, all of which are Level 3 inputs not supported by market activity. Significant changes in any of these inputs may result in a significant change in fair value, which is estimated at each reporting date. As of December 31, 2020, the fair value of the contingent consideration related to ArcherDX was $788.3 million. With respect to the ArcherDX Final Milestone, the liability has been reduced to zero as of June 30, 2021 from $262.5 million as of March 31, 2021 and $287.7 million as of December 31, 2020, with the offsetting change recorded as changes in fair value of contingent consideration in our consolidated statements of operations. The removal of the liability balance and the associated change in fair value of contingent consideration was a result of our reassessment of the steps necessary to achieve clearance or approval based on FDA feedback received principally in the three months ended June 30, 2021. As a result of our reassessment, we do not believe achievement of the conditions will occur prior to the expiry date for achievement under the timeframe prescribed in the acquisition agreement. We expect FDA clearance or approval of STRATAFIDE at a later date upon resolution of the necessary steps.

In connection with the acquisition, we granted awards of Invitae common stock to new employees who joined Invitae in connection with our acquisition of ArcherDX that vest upon the achievement of the contingent consideration milestones discussed above and are subject to the employee’s continued service with us, unless terminated without cause in which case vesting is only dependent on milestone achievement. As the number of shares that are expected to be issued are fixed, the awards are equity-classified. During the nine months ended September 30, 2021, we recorded a net $41.8 million in stock-based compensation expense related to the ArcherDX milestones, which includes $38.5 million related to milestones achieved in prior periods, $33.0 million due to an accounting modification of certain awards whereby the employees' continued substantive services were no longer required, offset by a reversal of $29.7 million recognized in prior periods related to the determination that the ArcherDX Final Milestone will not be achieved within the specified timeframe prescribed in the acquisition agreement.

One Codex

In February 2021, we acquired 100% of the equity interest of Reference Genomics, Inc. d/b/a One Codex ("One Codex"), a company developing and commercializing products and services relating to microbiome sequencing, analysis and reporting, for upfront consideration consisting of $
17.3 million in cash and 1.4 million shares of our common stock, of which approximately 0.2 million shares are subject to a hold-back to satisfy indemnification obligations that may arise following the closing. These shares subject to a hold-back were issued to a third-party at the closing date to hold in escrow until the escrow period is complete, and as such were classified as equity. We included the financial results of One Codex in our consolidated financial statements from the acquisition date, which were not material.

The following table summarizes the purchase price and post-combination expense recorded as a part of the acquisition of One Codex (in thousands):

	Purchase Price	Post-combination Expense
Cash transferred	$ 16,504	$ 783
Hold-back consideration - common stock	8,113	359
Common stock transferred	58,774	2,600
Total	$ 83,391	$ 3,742

Assets acquired and liabilities assumed are recorded based on valuations derived from estimated fair value assessments and assumptions used by us. While we believe that our estimates and assumptions underlying the valuations are reasonable, different estimates and assumptions could result in different valuations assigned to the individual assets acquired and liabilities assumed, and the resulting amount of goodwill. The following table summarizes the fair values of assets acquired and liabilities assumed through our acquisition of One Codex at the date of acquisition (in thousands):

Cash	$	1,549
Accounts receivable		684
Developed technology		23,841
Customer relationships		440
Total identifiable assets acquired		26,514
Other liabilities		(415)
Deferred tax liability		(6,150)
Net identifiable assets acquired		19,949
Goodwill		63,442
Total purchase price	$	83,391

Based on the guidance provided in ASC 805, *Business Combinations*, we accounted for the acquisition of One Codex as a business combination and determined that 1) One Codex was a business which combines inputs and processes to create outputs, and 2) substantially all of the fair value of gross assets acquired was not concentrated in a single identifiable asset or group of similar identifiable assets.

Our purchase price allocation for the acquisition is preliminary and subject to revision as additional information about fair value of assets and liabilities becomes available, primarily related to our deferred tax liability assumed in connection with the acquisition. Additional information that existed as of the acquisition date but at the time was unknown to us may become known to us during the remainder of the measurement period, a period not to exceed 12 months from the acquisition date.

We measured the identifiable assets and liabilities assumed at their acquisition date fair values separately from goodwill. The intangible assets acquired were developed technology related to One Codex's microbiome and infectious disease platform and its customer relationships in place at time of acquisition. The fair value of the intangible assets was estimated using an income approach with an estimated useful life of nine years.

Goodwill represents the excess of the purchase price over the fair value of the net tangible and intangible assets acquired. The acquisition of One Codex resulted in the recognition of $63.4 million of goodwill, which we believe relates primarily to expansion of the acquired technology to apply to new areas of genetic testing. The goodwill created as a result of the acquisition of One Codex is not deductible for tax purposes.

Genosity

In April 2021, we acquired 100% of the fully diluted equity of Genosity Inc. ("Genosity"), a company providing genomic laboratory services, for approximately $196.0 million, consisting of approximately $120.0 million in cash and the remainder in shares of our common stock. In connection with this transaction, we granted RSUs having a value of up to $5.0 million to certain continuing employees and recognized $0.3 million and $0.5 million in stock-based compensation expense for the three and nine months ended September 30, 2021. We included the financial results of Genosity in our consolidated financial statements from the acquisition date, which were not material.

The following table summarizes the purchase price recorded as a part of the acquisition of Genosity (in thousands):

		Purchase Price
Cash transferred	$	119,959
Hold back and other consideration		8,774
Common stock transferred		67,308
Total	$	196,041

Assets acquired and liabilities assumed are recorded based on valuations derived from estimated fair value assessments and assumptions used by us. While we believe that our estimates and assumptions underlying the valuations are reasonable, different estimates and assumptions could result in different valuations assigned to the individual assets acquired and liabilities assumed, and the resulting amount of goodwill. The following table summarizes the fair values of assets acquired and liabilities assumed through our acquisition of Genosity at the date of acquisition (in thousands):

Cash	$	906
Accounts receivable		355
Developed technology		76,500
Other assets		3,732
Total identifiable assets acquired		81,493
Other liabilities		(2,852)
Deferred tax liability		(17,600)
Net identifiable assets acquired		61,041
Goodwill		135,000
Total purchase price	$	196,041

Based on the guidance provided in ASC 805, *Business Combinations*, we accounted for the acquisition of Genosity as a business combination and determined that 1) Genosity was a business which combines inputs and processes to create outputs, and 2) substantially all of the fair value of gross assets acquired was not concentrated in a single identifiable asset or group of similar identifiable assets. Pursuant to the terms of the acquisition, we incorporated a provision to provide additional shares in the event that our common stock share price decreased after the acquisition, but prior to filing a resale registration statement. At acquisition we estimated this provision to be $7.0 million. On filing the resale registration statement during the period ended June 30, 2021, the fair value was $3.2 million; the difference of $3.8 million was recorded as an expense in general and administrative expense.

Our purchase price allocation for the acquisition is preliminary and subject to revision as additional information about fair value of assets and liabilities becomes available, primarily related to certain aspects of our asset valuations and our deferred tax liability assumed in connection with the acquisition. Additional information that existed as of the acquisition date but at the time was unknown to us may become known to us during the remainder of the measurement period, a period not to exceed 12 months from the acquisition date.

We measured the identifiable assets and liabilities assumed at their acquisition date fair values separately from goodwill. The intangible assets acquired were developed technology related to Genosity's genomic laboratory services and sequencing software in place at time of acquisition. The fair value of the intangible assets was estimated using an income approach with an estimated useful life of twelve years.

Goodwill represents the excess of the purchase price over the fair value of the net tangible and intangible assets acquired. The acquisition of Genosity resulted in the recognition of $135.0 million of goodwill, which we believe relates primarily to expansion of the acquired technology to apply to new areas of genetic testing. The goodwill created as a result of the acquisition of Genosity is not deductible for tax purposes.

Ciitizen

In September 2021, we acquired 100% of the equity of Ciitizen Corporation ("Ciitizen"), a patient-centric health technology company, for approximately $308.3 million, consisting of approximately $87.4 million in cash and 6.3 million shares of our common stock, of which approximately $10.4 million in cash and 0.8 million shares are subject to a hold-back to satisfy indemnification obligations that may arise following the closing. As of September 30, 2021, the value of the stock payable liability was $22.7 million with the $1.1 million quarterly change recorded in other income (expense), net. In connection with this transaction, we granted RSUs having a value of up to $246.9 million to certain continuing employees. During the three and nine months ended September 30, 2021, we recorded stock-based compensation expense of $1.6 million. We included the financial results of Ciitizen in our consolidated financial statements from the acquisition date, which were not material.

The following table summarizes the purchase price recorded as a part of the acquisition of Ciitizen (in thousands):

		Purchase Price
Cash transferred	$	87,361

Hold back and other consideration		34,161
Common stock transferred		186,778
Total	$	308,300

Assets acquired and liabilities assumed are recorded based on valuations derived from estimated fair value assessments and assumptions used by us. While we believe that our estimates and assumptions underlying the valuations are reasonable, different estimates and assumptions could result in different valuations assigned to the individual assets acquired and liabilities assumed, and the resulting amount of goodwill. The following table summarizes the fair values of assets acquired and liabilities assumed through our acquisition of Ciitizen at the date of acquisition (in thousands):

Cash	$	274
Accounts receivable		748
Other receivables		688
Developed technology		92,900
Other assets		970
Total identifiable assets acquired		95,580
Other liabilities		(2,550)
Deferred tax liability		(6,900)
Net identifiable assets acquired		86,130
Goodwill		222,170
Total purchase price	$	308,300

Based on the guidance provided in ASC 805, *Business Combinations*, we accounted for the acquisition of Ciitizen as a business combination and determined that 1) Ciitizen was a business which combines inputs and processes to create outputs, and 2) substantially all of the fair value of gross assets acquired was not concentrated in a single identifiable asset or group of similar identifiable assets.

Our purchase price allocation for the acquisition is preliminary and subject to revision as additional information about fair value of assets and liabilities becomes available, primarily related to certain aspects of our deferred tax liability assumed in connection with the acquisition. Additional information that existed as of the acquisition date but at the time was unknown to us may become known to us during the remainder of the measurement period, a period not to exceed 12 months from the acquisition date.

We measured the identifiable assets and liabilities assumed at their acquisition date fair values separately from goodwill. The intangible asset acquired were developed technology related to Ciitizen's patient data platform. The fair value of the intangible assets was estimated using an income approach with an estimated useful life of twelve years.

Goodwill represents the excess of the purchase price over the fair value of the net tangible and intangible assets acquired. The acquisition of Ciitizen resulted in the recognition of $222.2 million of goodwill, which we believe relates primarily to expansion of the acquired technology to apply to new areas of patient-centric consumer health tech company. The goodwill created as a result of the acquisition of Ciitizen is not deductible for tax purposes.

5.
Goodwill and intangible assets

Goodwill

The changes in the carrying amounts of goodwill were as follows (in thousands):

Balance as of December 31, 2020	$	1,863,623
Goodwill adjustment		(1,176)
Goodwill acquired		420,612
Balance as of September 30, 2021	$	2,283,059

Intangible assets

The following table presents details of our intangible assets (amounts in thousands, useful lives in years):

	September 30, 2021				December 31, 2020			
	Cost	Accumulated Amortization	Net	Weighted-Average Useful Life	Cost	Accumulated Amortization	Net	Weighted-Average Useful Life
Customer relationships	$ 41,515	$ (11,896)	$ 29,619	10.8	$ 41,075	$ (8,292)	$ 32,783	10.8
Developed technology	624,663	(66,280)	558,383	10.3	397,563	(31,013)	366,550	10.6
Non-compete agreement	286	(272)	14	5.0	286	(229)	57	5.0
Tradename	21,085	(1,767)	19,318	12.0	21,085	(447)	20,638	12.0
Patent assets and licenses	495	(128)	367	15.0	496	(103)	393	15.0
Right to develop new technology	19,359	(1,291)	18,068	15.0	19,359	(323)	19,036	15.0
In-process research and development	542,388	-	542,388	n/a	542,388	-	542,388	n/a
	$ 1,249,791	$ (81,634)	$ 1,168,157	10.5	$ 1,022,252	$ (40,407)	$ 981,845	10.9

Acquisition-related intangibles included in the above table are generally finite-lived, other than in-process research and development, which has an indefinite life, and are carried at cost less accumulated amortization. Customer relationships related to our 2017 business combinations are being amortized on an accelerated basis in proportion to estimated cash flows. All other finite-lived acquisition-related intangibles are being amortized on a straight-line basis over their estimated lives, which approximates the pattern in which the economic benefits of the intangible assets are expected to be realized. Amortization expense was $
15.6 million and $5.6 million for the three months ended September 30, 2021 and 2020, respectively, and $41.2 million and $14.8 million for the nine months ended September 30, 2021 and 2020, respectively. Amortization expense is recorded in cost of revenue, research and development, selling and marketing and general and administrative expense.

The following table summarizes our estimated future amortization expense of intangible assets with finite lives as of September 30, 2021 (in thousands):

2021 (remainder of year)	$ 17,607
2022	69,025
2023	68,012
2024	67,734
2025	65,980
Thereafter	337,411
Total estimated future amortization expense	$ 625,769

In July 2021, we acquired
100% of the equity interest of Medneon LLC, a digital health AI company, for $34.1 million in the form of $10.3 million in common stock, $4.9 million in liabilities, and the remainder in cash. We accounted for this transaction as an asset acquisition, as substantially all of the fair value is concentrated in the developed technology acquired. The fair value the of the developed technology is $33.9 million, which will be amortized over eight years to cost of revenue. The remaining purchase price of $0.2 million is the fair value of cash and cash equivalents.

6.
Balance sheet components

Inventory

Inventory consisted of the following (in thousands):

	September 30, 2021	December 31, 2020
Raw materials	$ 26,318	$ 21,324
Work in progress	3,215	8,847
Finished goods	1,100	1,859
Total inventory	$ 30,633	$ 32,030

Property and equipment, net

Property and equipment consisted of the following (in thousands):

	September 30, 2021	December 31, 2020
Leasehold improvements	$ 31,059	$ 26,516
Laboratory equipment	61,994	45,342
Computer equipment	15,829	10,939
Software	867	566
Furniture and fixtures	2,046	1,967
Automobiles	58	58
Construction-in-progress	33,672	12,061
Total property and equipment, gross	145,525	97,449
Accumulated depreciation and amortization	(44,525)	(31,347)
Total property and equipment, net	$ 101,000	$ 66,102

Depreciation expense was $
5.1 million and $2.4 million for the three months ended September 30, 2021 and 2020, respectively, and $13.2 million and $6.8 million for the nine months ended September 30, 2021 and 2020, respectively.

Accrued liabilities

Accrued liabilities consisted of the following (in thousands):

	September 30, 2021	December 31, 2020
Accrued compensation and related expenses	$ 40,037	$ 25,221
Accrued interest	583	2,333
Compensation and other liabilities associated with business combinations	15,377	25,600
Deferred revenue	8,261	6,378
Other	40,050	26,526
Total accrued liabilities	$ 104,308	$ 86,058

Other long-term liabilities

Other long-term liabilities consisted of the following (in thousands):

	September 30, 2021	December 31, 2020
Deferred revenue, non-current	678	1,380
Compensation and other liabilities associated with business combinations, non-current	39,625	825,976
Other	15,879	13,900
Total other long-term liabilities	$ 56,182	$ 841,256

7.
Fair value measurements

Financial assets and liabilities are recorded at fair value. Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability (an exit price) in an orderly transaction between market participants at the reporting date. The authoritative guidance establishes a three-level valuation hierarchy that prioritizes the inputs to valuation techniques used to measure fair value based upon whether such inputs are observable or unobservable. Observable inputs reflect market data obtained from independent sources, while unobservable inputs reflect market assumptions made by the reporting entity.

The three-level hierarchy for the inputs to valuation techniques is summarized as follows:

Level 1-Observable inputs such as quoted prices (unadjusted) for identical instruments in active markets.

Level 2-Observable inputs such as quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, or model-derived valuations whose significant inputs are observable.

Level 3-Unobservable inputs that reflect the reporting entity's own assumptions.

The following tables set forth the fair value of our financial instruments that were measured at fair value on a recurring basis (in thousands):

	September 30, 2021						
	Amortized Cost	Unrealized Gains	Unrealized Losses	Estimated Fair Value	Level 1	Level 2	Level 3
Financial assets:							
Money market funds	$ 864,694	$ -	$ -	$ 864,694	$ 864,694	$ -	$ -
U.S. Treasury notes	274,398	19	-	274,417	274,417	-	-
U.S. government agency securities	46,046	2	-	46,048	-	46,048	-
Total financial assets	$ 1,185,138	$ 21	$ -	$ 1,185,159	$ 1,139,111	$ 46,048	$ -
Financial liabilities:							
Stock payable liability				$ 34,087	$ -	$ -	$ 34,087
Contingent consideration				1,685	-	-	1,685
Total financial liabilities				$ 35,772	$ -	$ -	$ 35,772

	September 30, 2021
Reported as:	
Cash equivalents	$ 854,419
Restricted cash	10,275
Marketable securities	320,465
Total cash equivalents, restricted cash, and marketable securities	$ 1,185,159
Accrued liabilities	$ -
Other long-term liabilities	35,772
Total liabilities	$ 35,772

	December 31, 2020						
	Amortized Cost	Unrealized Gains	Unrealized Losses	Estimated Fair Value	Level 1	Level 2	Level 3
Financial assets:							
Money market funds	$ 83,109	$ -	$ -	$ 83,109	$ 83,109	$ -	$ -
U.S. Treasury notes	164,894	7	(15)	164,886	164,886	-	-
U.S. government agency securities	64,291	9	-	64,300	-	64,300	-
Total financial assets	$ 312,294	$ 16	$ (15)	$ 312,295	$ 247,995	$ 64,300	$ -
Financial liabilities:							
Stock payable liability				$ 39,237	$ -	$ -	$ 39,237
Contingent consideration				796,639	-	-	796,639
Total financial liabilities				$ 835,876	$ -	$ -	$ 835,876

	December 31, 2020
Reported as:	
Cash equivalents	$ 76,423
Restricted cash	6,686
Marketable securities	229,186
Total cash equivalents, restricted cash, and marketable securities	$ 312,295
Accrued liabilities	$ 10,592
Other long-term liabilities	825,284
Total liabilities	$ 835,876

There were
no transfers between Level 1, Level 2 and Level 3 during the periods presented. There were no investments with unrealized losses at September 30, 2021. Our debt securities of U.S. government agencies are classified as Level 2 as they are valued based upon quoted market prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active and model-based valuation techniques for which all significant inputs are observable in the market or can be corroborated by observable market data for substantially the full term of the assets. Where applicable, these models project future cash flows and discount the future amounts to a present value using market-based observable inputs obtained from various third-party data providers, including but not limited to benchmark yields, interest rate curves, reported trades, broker/dealer quotes and reference data.

Stock payable liabilities relate to certain indemnification hold-backs resulting from business combinations that are settled in shares of our common stock. We elected to account for these liabilities using the fair value option due to the inherent nature of the liabilities and the changes in value of the underlying shares that will ultimately be issued to settle the liabilities. The estimated fair value of these liabilities is classified as Level 3 and determined based upon the number of shares that are issuable to the sellers and the quoted closing price of our common stock as of the reporting date. The number of shares that will ultimately be issued is subject to adjustment for indemnified claims that existed as of the closing date for each acquisition. Changes in the number of shares issued and share price can significantly affect the estimated fair value of the liabilities. The change in fair value related to stock payable liabilities recorded to other income (expense), net during the three months ended September 30, 2021 and 2020 was income of $3.4 million and expense of $16.2 million, respectively, and income of $9.2 million and expense of $37.9 million during the nine months ended September 30, 2021 and 2020, respectively.

8.
Commitments and contingencies

Leases

In 2015, we entered into an operating lease agreement for our headquarters and main production facility in San Francisco, California, which commenced in 2016. This lease expires in 2026 and we may renew the lease for an additional ten years. This optional period was not considered reasonably certain to be exercised and therefore we determined the lease term to be a ten-year period expiring in 2026. In connection with the execution of the lease, we provided a security deposit of approximately $4.6 million, which is included in restricted cash in our consolidated balance sheets. We also have other operating leases for office and laboratory space domestically and internationally. We expect to enter into new leases and modify existing leases as we support continued growth of our operations.

We have entered into various finance lease agreements to obtain laboratory equipment. The terms of our finance leases are generally three years and are typically secured by the underlying equipment. The portion of the future payments designated as principal repayment and related interest was classified as a finance lease obligation on our consolidated balance sheets. Finance lease assets are recorded within other assets on our consolidated balance sheets.

Debt financing

In October 2020, we entered into a credit agreement with a financial institution under which we borrowed $135.0 million (the "2020 Term Loan") concurrent with the closing of the ArcherDX acquisition. The 2020 Term Loan is secured by a first priority lien on all of our and our subsidiaries' assets, and is guaranteed by us and our subsidiaries. The 2020 Term Loan bears interest at an annual rate equal to three-month LIBOR, subject to a 2.00% LIBOR floor, plus a margin of 8.75%. If three-month LIBOR can no longer be determined or if the applicable governmental authority ceases to supervise or sanction such rates, then we shall endeavor to agree with the administrative agent, an alternate rate of interest that gives due consideration to the then prevailing market convention for determining interest for comparable loans in the United States; provided that until such alternative rate of interest is agreed, the 2020 Term Loan shall bear interest at the *Wall Street Journal* Prime Rate. The 2020 Term Loan will mature on (i) June 1, 2024 if at such time our 2024 Notes (defined below) are outstanding and are due to mature on September 1, 2024 (provided that if, prior to such date, the maturity date of at least 80% of the 2024 Notes is extended to a date that is prior to September 1, 2025, the maturity date for the 2020 Term Loan will be automatically extended to a date that is 90 days prior to such 2024 Notes maturity date as extended), or (ii) otherwise, on June 1, 2025. The full amount of the 2020 Term Loan is due upon maturity. Debt discounts, including debt issuance costs, related to the 2020 Term Loan of $32.8 million were recorded as a direct deduction from the debt liability and are being amortized to interest expense over the term of the 2020 Term Loan. Interest expense related to our debt financings, excluding the impact of our convertible senior notes, was $5.9 million and nil for the three months ended September 30, 2021 and 2020, respectively, and $17.7 million and nil for the nine months ended September 30, 2021 and 2020, respectively.

Convertible senior notes

Convertible senior notes due 2024

In September 2019, we issued, at par value, $350.0 million aggregate principal amount of 2.00% convertible senior notes due 2024 (the "2024 Notes") in a private offering. The 2024 Notes are our senior unsecured obligations and will mature on September 1, 2024, unless earlier converted, redeemed or repurchased. The 2024 Notes bear cash interest at a rate of 2.0% per year, payable semi-annually in arrears on March 1 and September 1 of each year, beginning on March 1, 2020.

Upon conversion, the 2024 Notes will be convertible into cash, shares of our common stock or a combination of cash and shares of our common stock, at our election. The initial conversion rate for the 2024 Notes is 33.6293 shares of our common stock per $1,000 principal amount of the 2024 Notes (equivalent to an initial conversion price of approximately $29.74 per share of common stock).

If we undergo a fundamental change (as defined in the indenture governing the 2024 Notes), the holders of the 2024 Notes may require us to repurchase all or any portion of their 2024 Notes for cash at a repurchase price equal to 100% of the principal amount of the 2024 Notes to be repurchased plus accrued and unpaid interest to, but excluding, the redemption date.

The 2024 Notes will be convertible at the option of the holders at any time prior to the close of business on the business day immediately preceding March 1, 2024, only under the following circumstances: (1) during any calendar quarter commencing after the calendar quarter ending on December 31, 2019 (and only during such calendar quarter), if the last reported sale price of our common stock for at least 20 trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on, and including, the last trading day of the immediately preceding calendar quarter is greater than or equal to 130% of the conversion price for the 2024 Notes on each applicable trading day; (2) during the five business day period after any five consecutive trading day period (the "measurement period") in which the trading price per $1,000 principal amount of 2024 Notes for each trading day of the measurement period was less than 98% of the product of the last reported sale price of our common stock and the conversion rate on each such trading day; (3) if we call any or all of the 2024 Notes for redemption, at any time prior to the close of business on the scheduled trading day immediately preceding the redemption date; or (4) upon the occurrence of specified corporate events. On or after March 1, 2024 until the close of business on the business day immediately preceding the maturity date, holders may convert their 2024 Notes at any time, regardless of the foregoing circumstances. These notes were convertible at the option of the holders during the quarters beginning on January 1, 2021 and April 1, 2021 due to the sale price of our common stock during the quarters ended December 31, 2020 and March 31, 2021, respectively. No holders converted their notes during the nine months ended September 30, 2021.

We may not redeem the 2024 Notes prior to September 6, 2022. We may redeem for cash all or any portion of the 2024 Notes, at our option, on or after September 6, 2022 and on or before the 30th scheduled trading day immediately before the maturity date if the last reported sale price of our common stock has been at least 130% of the conversion price then in effect for at least 20 trading days (whether or not consecutive) during any 30 consecutive trading day period (including the last trading day of such period) ending on, and including, the trading day immediately preceding the date on which we provide notice of redemption at a redemption price equal to 100% of the principal amount of the notes to be redeemed, plus accrued and unpaid interest to, but excluding, the redemption date.

Convertible senior notes due 2028

In April 2021, we issued, at 99% of par value, $1.2 billion aggregate principal amount of 1.5% convertible senior notes due 2028 (the "2028 Notes") in a private offering. The 2028 Notes are our senior unsecured obligations and will mature on April 1, 2028, unless earlier converted, redeemed or repurchased. The 2028 Notes bear cash interest at a rate of 1.5% per year, payable semi-annually in arrears on April 1 and October 1 of each year, beginning on October 1, 2021. Upon conversion, the 2028 Notes will be convertible into cash, shares of our common stock or a combination of cash and shares of our common stock, at our election.

The 2028 Notes will be convertible at the option of the holder at any time until the second scheduled trading day prior to the maturity date, including in connection with a redemption by us. The 2028 Notes will be convertible into shares of our common stock based on an initial conversion rate of 23.1589 shares of common stock per $1,000 principal amount of the 2028 Notes (which is equal to an initial conversion price of $43.18 per share), in each case subject to customary anti-dilution and other adjustments as a result of certain extraordinary transactions.

We may not redeem the 2028 Notes prior to April 6, 2025. On or after April 6, 2025, the 2028 Notes will be redeemable by us in the event that the closing sale price of our common stock has been at least 150% of the conversion price then in effect for at least 20 trading days (whether or not consecutive) during any 30 consecutive trading day period (including the last trading day of such period) ending on, and including, the trading day immediately preceding the date on which we provide the redemption notice at a redemption price of 100% of the principal amount of such 2028 Notes, plus accrued and unpaid interest to, but excluding, the redemption date.

With certain exceptions, upon a change of control of the Company or the failure of our common stock to be listed on certain stock exchanges, the holders of the 2028 Notes may require that we repurchase all or part of the principal amount of the Notes at a repurchase price of 100% of the principal amount of the 2028 Notes to be repurchased, plus unpaid interest to, but excluding, the maturity date.

Convertible senior notes

We adopted the provisions of ASU 2020-06 on January 1, 2021; see further information in Note 2, "Summary of significant accounting policies."
Our 2024 Notes and 2028 Notes (collectively, our "convertible senior notes") consisted of the following (in thousands):

	September 30, 2021	December 31, 2020
Outstanding principal	$ 1,499,996	$ 350,000
Unamortized debt discount and issuance costs	(37,497)	(66,276)
Net carrying amount, liability component	$ 1,462,499	$ 283,724

As of September 30, 2021, the fair value of the 2024 Notes and 2028 Notes was $429.5 million and $1.2 billion, respectively. The estimated fair value of the 2024 Notes and 2028 Notes, which use Level 2 fair value inputs, was determined based on the estimated or actual bid prices in an over-the-counter market and/or market conditions including the price and volatility of our common stock and comparable company information. We recognized $
7.7 million and $5.5 million of interest expense related to our convertible senior notes during the three months ended September 30, 2021 and 2020, respectively, and $17.2 million and $16.4 million during the nine months ended September 30, 2021 and 2020, respectively. Of the interest expense recognized during the three and nine months ended September 30, 2021, $1.6 million and $3.6 million, respectively, was related to amortization of issuance costs and the remainder was related to contractual interest incurred.

Other commitments

In the normal course of business, we enter into various purchase commitments primarily related to service agreements and laboratory supplies. At September 30, 2021, our total future payments under noncancelable unconditional purchase commitments having a remaining term of over one year were $66.7 million.

Guarantees and indemnifications

As permitted under Delaware law and in accordance with our bylaws, we indemnify our directors and officers for certain events or occurrences while the officer or director is or was serving in such capacity. The maximum amount of potential future indemnification is unlimited; however, we maintain director and officer liability insurance. This insurance allows the transfer of the risk associated with our exposure and may enable us to recover a portion of any future amounts paid. We believe the fair value of these indemnification agreements is minimal. Accordingly, we did not record any liabilities associated with these indemnification agreements at September 30, 2021 or December 31, 2020.

Contingencies

We are and may from time to time be involved in various legal proceedings and claims arising in the ordinary course of business. Legal proceedings, including litigation, government investigations and enforcement actions could result in material costs, occupy significant management resources and entail civil and criminal penalties, even if we ultimately prevail. If an investigation results in a proceeding against us, an adverse outcome could include us being required to pay treble damages, and incur attorneys' fees, civil or criminal penalties and other adverse actions that could materially and adversely affect our business, financial condition and results of operations. While we believe any such claims are unsubstantiated, and we believe we are in compliance with applicable laws and regulations applicable to our business, the resolution of any such claims could be material.

We were not a party to any material legal proceedings at September 30, 2021, or at the date of this report except for matters listed below. We cannot currently predict the outcome of these actions.

Natera, Inc.

On January 27, 2020, Natera filed a lawsuit against ArcherDX (a subsidiary of Invitae effective October 2, 2020) in the United States District Court for the District of Delaware, alleging that ArcherDX's products using AMP chemistry, and the manufacture, use, sale, and offer for sale of such products, infringe U.S. Patent No. 10,538,814. On March 25, 2020, ArcherDX filed an answer denying Natera's allegations and asserting certain affirmative defenses and counterclaims, including that U.S. Patent No. 10,538,814 is invalid and not infringed. On April 15, 2020, Natera filed an answer denying ArcherDX's counterclaims and filed an amended complaint alleging that ArcherDX's products using AMP chemistry, including STRATAFIDE, PCM, LiquidPlex, ArcherMET, FusionPlex, and VariantPlex, and the manufacture, use, sale, and offer for sale of such products, infringe U.S. Patent No. 10,538,814, U.S. Patent No. 10,557,172, U.S. Patent No. 10,590,482, and U.S. Patent No. 10,597,708, each of which are held by Natera. Natera seeks, among other things, damages and other monetary relief, costs and attorneys' fees, and an order enjoining ArcherDX from further infringement of such patents. On May 13, 2020, ArcherDX filed an answer to Natera's amended complaint denying Natera's allegations and asserting certain affirmative defenses and counterclaims, including that the asserted patents are invalid and not infringed. On June 3, 2020, Natera filed an answer denying ArcherDX's counterclaims. On June 4, 2020, ArcherDX filed a motion seeking dismissal of Natera's infringement claims against STRATAFIDE, PCM, and ArcherMET, and for a judgment that U.S. Patent No. 10,538,814, U.S. Patent No. 10,557,172, and U.S. Patent No. 10,590,482 are invalid. On August 6, 2020, Natera filed another complaint against ArcherDX in the United States District Court for the District of Delaware alleging that ArcherDX's products using AMP chemistry, including STRATAFIDE, PCM, LiquidPlex, ArcherMET, and VariantPlex, and the manufacture, use, sale, and offer for sale of such products, infringe U.S. Patent No. 10,731,220. Natera seeks, among other things, damages and other monetary relief, costs and attorneys' fees, and an order enjoining ArcherDX from further infringement of the patent. On October 13, 2020, the court issued an order denying ArcherDX's motion for dismissal of Natera's infringement claims against STRATAFIDE, PCM, and ArcherMET, and declined to enter judgment that U.S. Patent No. 10,538,814, U.S. Patent No. 10,557,172, and U.S. Patent No. 10,590,482 are invalid. On January 12, 2021, the court issued an order granting Natera leave to amend its complaint to add Invitae as a co-defendant and plead allegations that ArcherDX and Invitae induce end-users to infringe the patents-in-suit. Natera filed its Second Amended Complaint on the same day, with service completed on January 15, 2021. ArcherDX and Invitae filed answers to the Second Amended Complaint on January 26, 2021 and February 5, 2021, respectively, denying Natera's allegations and restating certain affirmative defenses and counterclaims of non-infringement and invalidity. The litigations have now been consolidated for all purposes. A claim construction order was issued on June 28, 2021. On October 27, 2021, Natera filed its Third Amended Complaint to add a Certificate of Correction to U.S. Patent No. 10,590,482. On November 3, 2021, ArcherDX filed its Answer and Counterclaims to Natera's Third Amended Complaint, adding an inequitable conduct defense and declaratory judgment counterclaims. Discovery is ongoing, and trial has been scheduled for May 2022.

In addition, on October 6, 2020, Natera filed a complaint against Genosity in the United States District Court for the District of Delaware, alleging that Genosity's use of its AsTra products, and the manufacture, use, sale, and offer for sale of such products, infringes U.S. Patent No. 10,731,220. Natera's complaint further alleges that Genosity's accused products use ArcherDX's ctDNA and region-specific primers. Genosity filed an answer to the complaint on February 15, 2021, denying Natera's allegations and setting forth affirmative defenses and counterclaims of non-infringement, invalidity and unenforceability due to inequitable conduct. On March 8, 2021, Natera filed a motion to dismiss and strike certain affirmative defenses and counterclaims brought by Genosity relating to inequitable conduct; the court has not yet issued a decision. No case schedule has been set.

QIAGEN Sciences

On July 10, 2018, ArcherDX and the General Hospital Corporation d/b/a Massachusetts General Hospital, which we refer to as MGH, filed a lawsuit in the United States District Court for the District of Delaware against QIAGEN Sciences, LLC, QIAGEN LLC, QIAGEN Beverly, Inc., QIAGEN Gaithersburg, Inc., QIAGEN GmbH and QIAGEN N.V., which is collectively referred to herein as QIAGEN, and a named QIAGEN executive who was a former member of ArcherDX's board of directors, alleging several causes of action, including infringement of the '810 Patent, trade secret misappropriation, breach of fiduciary duty, false advertising, tortious interference and deceptive trade practices. The '810 Patent relates to methods for preparing a nucleic acid for sequencing and aspects of ArcherDX's AMP technology. On October 30, 2019, with the permission of the Court, ArcherDX amended ArcherDX's complaint to add a claim for infringement of the '597 Patent. The '597 Patent relates to methods of preparing and analyzing nucleic acids, such as by enriching target sequences prior to sequencing, and aspects of ArcherDX's AMP technology. The QIAGEN products that ArcherDX alleges infringe the '810 Patent and the '597 Patent include, but are not limited to, QIAseq Targeted DNA Panels, QIAseq Targeted RNAscan Panels, QIAseq Index Kits and QIAseq Immune Repertoire RNA Library Kits. ArcherDX is seeking, among other things, damages for ArcherDX's lost profits due to QIAGEN's infringement and a permanent injunction enjoining QIAGEN from marketing and selling the infringing products and from using ArcherDX's trade secrets. On December 5, 2019, QIAGEN and the named QIAGEN executive submitted their answer denying the allegations in ArcherDX's complaint and asserting affirmative defenses that, among other things, the '810 Patent and '597 Patent are not infringed by QIAGEN's products, that both patents are invalid, and that the complaint fails to state any claim for which relief may be granted. On March 1, 2021, each of ArcherDX and QIAGEN moved for summary judgment on issues relating to infringement and validity of ArcherDX's patents, breach of fiduciary duty and trade secret misappropriation. On June 18, 2021, ArcherDX informed the court that it would not assert the following claims to streamline the issues for trial: trade secret misappropriation, false advertising, deceptive trade practices, and tortious interference. The court denied QIAGEN's motion for summary judgment on trade secret misappropriation as moot on June 21, 2021, denied QIAGEN's motion for summary judgment on breach of fiduciary duty on July 26, 2021, and granted QIAGEN's motion for summary judgment of no literal infringement of the '810 Patent on August 21, 2021. Trial proceeded on August 23 through August 27, 2021, resulting in a unanimous jury verdict, which found that: (i) all asserted claims of the '810 and '597 Patents are valid, (ii) QIAGEN willfully infringed the asserted claims of the '810 patent (under the doctrine of equivalents) and the '597 patent (literal infringement), and (iii) ArcherDX and MGH are entitled to recover approximately $ 4.7 million in damages. Both parties filed post-trial motions on October 21, 2021, in which (x) Qiagen seeks to overturn the jury verdict by requesting judgment as a matter of law or, in the alternative, a new trial or altered judgment on the issues of non-infringement, invalidity and damages, and (y) ArcherDX seeks a permanent injunction on infringing products and services approved for clinical diagnosis by a regulatory authority, ongoing royalty for products not enjoined, supplemental damages, interest and enhanced damages.

9.
Stockholders' equity

Shares outstanding

Shares of convertible preferred and common stock were as follows (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2021	2020	2021	2020
Convertible preferred stock:				
Shares outstanding, beginning of period	125	125	125	125
Conversion into common stock	(125)	-	(125)	-
Shares outstanding, end of period	-	125	-	125
Common stock:				
Shares outstanding, beginning of period	203,018	131,289	185,886	98,796
Common stock issued in connection with public offering	-	-	8,932	23,058
Common stock issued on exercise of stock options, net	1,361	245	1,940	553
Common stock issued pursuant to vesting of RSUs	718	1,322	4,101	4,803
Common stock issued pursuant to exercises of warrants	-	54	208	202
Common stock issued pursuant to employee stock purchase plan	-	-	271	342
Common stock issued pursuant to business combinations	21,005	358	24,764	5,514
Common stock issued upon conversion of preferred stock	125	-	125	-
Shares outstanding, end of period	226,227	133,268	226,227	133,268

Convertible preferred stock

In August 2017, in a private placement to certain accredited investors, we issued shares of our Series A convertible preferred stock which are convertible into common stock on a one-for-one basis, subject to adjustment for events such as stock splits, combinations and the like. The Series A convertible preferred stock is a non-voting common stock equivalent with a par value of $0.0001 and has the right to receive dividends first or simultaneously with payment of dividends on common stock. In the event of any liquidation or dissolution of the Company, the Series A preferred stock is entitled to receive $0.001 per share prior to the payment of any amount to any holders of capital stock ranking junior to the Series A preferred stock and thereafter shall participate pari passu with the holders of our common stock (on an as-if-converted-to-common-stock basis). During the quarter ended September 30, 2021, 124,913 shares of Series A convertible preferred stock were converted to 124,913 shares of common stock. As of September 30, 2021, there were no shares of Series A convertible preferred stock outstanding.

Sales Agreements

In May 2021, we entered into a sales agreement (the "2021 Sales Agreement") with Cowen and Company, LLC ("Cowen") under which we may offer and sell from time to time at our sole discretion shares of our common stock through Cowen as our sales agent, in an aggregate amount not to exceed $400.0 million. Per the terms of the agreement, Cowen will receive a commission of up to 3% of the gross proceeds of the sales price of all shares sold through it as sales agent under the 2021 Sales Agreement.

In August 2018, we entered into a common stock sales agreement (the "2018 Sales Agreement") with Cowen under which we may have offered and sold from time to time at our sole discretion shares of our common stock through Cowen as our sales agent, in an aggregate amount not to exceed $75.0 million. Per the terms of the agreement, Cowen received a commission equal to 3% of the gross proceeds of the sales price of all shares sold through it as sales agent under the 2018 Sales Agreement. In March 2019, we amended the 2018 Sales Agreement to increase the aggregate amount of our common stock to be sold under this agreement not to exceed $175.0 million. During 2018, 2019 and 2020, we sold 8.7 million shares of our common stock for gross proceeds of the full $175.0 million under this agreement, and generated net proceeds of $169.1 million.

Public offering

In January 2021, we issued, in an underwritten public offering, an aggregate of 8.9 million shares of our common stock at a price of $51.50 per share, for gross proceeds of $460.0 million and net proceeds of $434.3 million after deducting underwriting discounts and commissions and offering expenses.

In April 2020, we sold, in an underwritten public offering, an aggregate of 20.4 million shares of our common stock at a price of $9.00 per share, for gross proceeds of $184.0 million and net proceeds of $173.0 million.

Private placement

In connection with our acquisition of ArcherDX, in June 2020 we entered into a definitive agreement to sell $275.0 million in common stock in a private placement at a price of $16.85 per share. We received net proceeds of $263.7 million after deducting underwriting discounts and commissions and offering expenses upon the closing of the private placement in October 2020, concurrently with our acquisition of ArcherDX.

10.
Stock incentive plans

Stock incentive plans

In 2010, we adopted the 2010 Incentive Plan (the “2010 Plan”). The 2010 Plan provides for the granting of stock-based awards to employees, directors and consultants under terms and provisions established by our Board of Directors. Under the terms of the 2010 Plan, options may be granted at an exercise price not less than the fair market value of our common stock. For employees holding more than 10% of the voting rights of all classes of stock, the exercise prices for incentive and nonstatutory stock options must be at least 110% of fair market value of our common stock on the grant date, as determined by our Board of Directors. The terms of options granted under the 2010 Plan may not exceed ten years.

In January 2015, we adopted the 2015 Stock Incentive Plan (the “2015 Plan”), which became effective upon the closing of our initial public offering. Shares outstanding under the 2010 Plan were transferred to the 2015 Plan upon effectiveness of the 2015 Plan. The 2015 Plan provides for automatic annual increases in shares available for grant, beginning on January 1, 2016 through January 1, 2025. In addition, shares subject to awards under the 2010 Plan that are forfeited or terminated will be added to the 2015 Plan. The 2015 Plan provides for the grant of incentive stock options, nonstatutory stock options, restricted stock awards, stock units, stock appreciation rights and other forms of equity compensation, all of which may be granted to employees, including officers, non-employee directors and consultants. Additionally, the 2015 Plan provides for the grant of cash-based awards.

Options granted generally vest over a period of
four years. Typically, the vesting schedule for options granted to newly hired employees provides that 1/4 of the award vests upon the first anniversary of the employee’s date of hire, with the remainder of the award vesting monthly thereafter at a rate of 1/48 of the total shares subject to the option. All other options typically vest in equal monthly installments over the four-year vesting schedule. Upon the acquisition of ArcherDX in October 2020, any option that was outstanding was converted into a fully vested option to purchase a share of our common stock, which resulted in the issuance of options to purchase 3.7 million shares of our common stock.

RSUs generally vest over a period of three years. Typically, the vesting schedule for RSUs provides that 1/3 of the award vests upon each anniversary of the grant date, with certain awards that include a portion that vests immediately upon grant. We also have certain awards granted in connection with our management incentive plan which vest over a period of two years. In June 2019, we granted Time-based RSUs in connection with the acquisition of Singular Bio which vested in three equal installments over a period of 18 months and PRSUs that vest based on the achievement of performance conditions; see further details in Note 4, "Business combinations."

Activity under the 2010 Plan and the 2015 Plan is set forth below (in thousands, except per share amounts and years):

	Shares Available For Grant	Stock Options Outstanding	Weighted-Average Exercise Price Per Share	Weighted-Average Remaining Contractual Life (Years)	Aggregate Intrinsic Value
Balances at December 31, 2020	7,447	4,877	$ 7.75	6.8	$ 166,130
Additional shares reserved	16,738	-			
Options granted	(244)	244	34.90		
Options cancelled	40	(40)	26.64		
Options exercised	-	(1,940)	4.21		
RSUs and PRSUs granted	(13,853)	-			
RSUs and PRSUs cancelled	842	-			
Balances at September 30, 2021	10,970	3,141	$ 11.80	5.8	$ 53,737
Options exercisable at September 30, 2021		2,687	$ 9.45	5.3	$ 51,080
Options vested and expected to vest at September 30, 2021		3,113	$ 11.74	5.8	$ 53,440

The aggregate intrinsic value is calculated as the difference between the exercise price of the underlying stock options and the fair value of our common stock for stock options that were in-the-money.

The following table summarizes RSU activity (in thousands, except per share data):

	Number of Shares	Weighted- Average Grant Date Fair Value Per Share
Balance at December 31, 2020	6,602	$ 12.89
RSUs and PRSUs granted	13,853	$ 30.53
RSUs and PRSUs vested	(4,101)	$ 21.17
RSUs and PRSUs cancelled	(842)	$ 25.53
Balance at September 30, 2021	15,512	$ 25.76

Stock-based compensation

The following table summarizes stock-based compensation expense included in the consolidated statements of operations (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2021	2020	2021	2020
Cost of revenue	$ 2,010	$ 2,104	$ 9,668	$ 5,321
Research and development	12,104	7,185	58,441	70,954
Selling and marketing	2,457	4,078	12,797	9,198
General and administrative	8,875	7,838	50,876	16,856
Total stock-based compensation expense	$ 25,446	$ 21,205	$ 131,782	$ 102,329

11.
Net loss per share

The following table presents the calculation of basic and diluted net loss per share (in thousands, except per share amounts):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2021	2020	2021	2020
Net loss	$ (198,176)	$ (102,902)	$ (173,882)	$ (367,832)
Shares used in computing net loss per share, basic and diluted	218,384	132,484	205,587	119,386
Net loss per share, basic and diluted	$ (0.91)	$ (0.78)	$ (0.85)	$ (3.08)

The following common stock equivalents have been excluded from diluted net loss per share because their inclusion would be anti-dilutive (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2021	2020	2021	2020
Shares of common stock subject to outstanding options	3,884	3,365	4,371	3,419
Shares of common stock subject to outstanding warrants	-	330	36	396
Shares of common stock subject to outstanding RSUs and PRSUs	8,769	7,331	7,730	7,534
Shares of common stock pursuant to ESPP	368	312	304	316
Shares of common stock underlying Series A convertible preferred stock	125	125	125	125
Shares of common stock subject to convertible senior notes conversion	38,403	8,074	38,403	8,074
Total shares of common stock equivalents	51,549	19,537	50,969	19,864

12.
Geographic information

Revenue by country is determined based on the billing address of the customer.
The following presents revenue by country (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2021	2020	2021	2020
United States	$ 100,957	$ 64,322	$ 293,868	$ 167,462
Rest of world	13,438	4,406	40,460	11,705
Total revenue	$ 114,395	$ 68,728	$ 334,328	$ 179,167

ITEM 2. Management's Discussion and Analysis of Financial Condition and Results of Operations.

The following discussion of our financial condition and results of operations should be read in conjunction with our condensed consolidated financial statements and the related notes included in Item 1 of Part I of this report, and together with our audited consolidated financial statements and the related notes included in our Annual Report on Form 10-K for the year ended December 31, 2020. Historic results are not necessarily indicative of future results.

This report contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. All statements in this report other than statements of historical fact, including statements identified by words such as "believe," "may," "will," "estimate," "continue," "anticipate," "intend," "expect" and similar expressions, are forward-looking statements. Forward-looking statements include, but are not limited to, statements about:

•our views regarding the future of genetic testing and its role in mainstream medical practice;

•the impact of COVID-19 on our business and the actions we have taken or may take in response thereto;

•our mission and strategy for our business, products and technology, including our ability to expand our content and develop new content while maintaining attractive pricing, further enhance our genetic testing service and the related user experience, build interest in and demand for our tests and attract potential partners;

•the implementation of our business model;

•the expected benefits from and our ability to integrate our acquisitions;

•our ability to obtain regulatory approvals for our tests;

•the rate and degree of market acceptance of our tests and genetic testing generally;

•our ability to scale our infrastructure and operations in a cost-effective manner;

•the timing of and our ability to introduce improvements to our genetic testing platform and to expand our assays to include additional genes;

•the timing and results of studies with respect to our tests;

•developments and projections relating to our competitors and our industry;

•our competitive strengths;

•the degree to which individuals will share genetic information generally, as well as share any related potential economic opportunities with us;

•our commercial plans, including our sales and marketing expectations as well as our ability to expand internationally;

•our ability to obtain and maintain adequate reimbursement for our tests;

•regulatory developments in the United States and foreign countries;

•our ability to attract and retain key scientific, sales, engineering or management personnel;

•our expectations regarding our ability to obtain and maintain intellectual property protection and not infringe on the rights of others;

•our ability to obtain funding for our operations and the growth of our business, including potential acquisitions;

•our financial performance;

•the impact of accounting pronouncements and our critical accounting policies, judgments, estimates and assumptions on our financial results;

•our expectations regarding our future revenue, cost of revenue, operating expenses and capital expenditures, and our future capital requirements; and

•the impact of tax laws on our business.

Forward-looking statements are subject to a number of risks and uncertainties that could cause actual results to differ materially from those expected. These risks and uncertainties include, but are not limited to, those risks discussed in Item 1A of Part II of this report. Although we believe that the expectations and assumptions reflected in the forward-looking statements are reasonable, we cannot guarantee future results, level of activity, performance or achievements. In addition, neither we nor any other person assumes responsibility for the accuracy and completeness of any of these forward-looking statements. Any forward-looking statements in this report speak only as of the date of this report. We expressly disclaim any obligation or undertaking to update any forward-looking statements.

In this report, all references to “Invitae,” “we,” “us,” “our,” or “the Company” mean Invitae Corporation.

Invitae and the Invitae logo are trademarks of Invitae Corporation. AMP™, STRATAFIDE™, LiquidPlex™, VariantPlex® and FusionPlex®, are the property of ArcherDX, LLC, a wholly owned subsidiary of Invitae Corporation. We also refer to trademarks of other companies and organizations in this report.

Summary of risk factors

Our business is subject to numerous risks and uncertainties that could affect our ability to successfully implement our business strategy and affect our financial results. You should carefully consider all of the information in this report and, in particular, the following principal risks and all of the other specific factors described in this Item 1A. before deciding whether to invest in our company.

•We face risks related to health epidemics, including the recent COVID-19 pandemic, which could have a material adverse effect on our business and results of operations.

•We expect to continue incurring significant losses, and we may not successfully execute our plan to achieve or sustain profitability.

•Our inability to raise additional capital on acceptable terms in the future may limit our ability to develop and commercialize new tests and expand our operations.

•We have acquired and may continue to acquire businesses or assets, form joint ventures or make investments in other companies or technologies that could harm our operating results, dilute our stockholders’ ownership, or cause us to incur debt or significant expense.

•We rely on highly skilled personnel in a broad array of disciplines and, if we are unable to hire, retain or motivate these individuals, or maintain our corporate culture, we may not be able to maintain the quality of our services or grow effectively.

•We need to scale our infrastructure in advance of demand for our tests, and our failure to generate sufficient demand for our tests would have a negative impact on our business and our ability to attain profitability.

•If third-party payers, including managed care organizations, private health insurers and government health plans do not provide adequate reimbursement for our tests or we are unable to comply with their requirements for reimbursement, our commercial success could be negatively affected.

•We face intense competition, which is likely to intensify further as existing competitors devote additional resources to, and new participants enter, the market. If we cannot compete successfully, we may be unable to increase our revenue or achieve and sustain profitability.

•We may not be able to manage our future growth effectively, which could make it difficult to execute our business strategy.

•Security breaches, privacy issues, loss of data and other incidents could compromise sensitive or personal information related to our business or prevent us from accessing critical information and expose us to liability, which could adversely affect our business and our reputation.

•If we are not able to continue to generate substantial demand of our tests, our commercial success will be negatively affected.

•If our STRATAFIDE and PCM products and related services do not perform as expected, we may not realize the expected benefits of our recent acquisition of ArcherDX.

•The future growth of our distributed products business is partially dependent upon regulatory approval and market acceptance of our IVD products, including STRATAFIDE and PCM.

•Our success will depend on our ability to use rapidly changing genetic data to interpret test results accurately and consistently, and our failure to do so would have an adverse effect on our operating results and business, harm our reputation and could result in substantial liabilities that exceed our resources.

•If the FDA regulates the tests we currently offer as LDTs as medical devices, we could incur substantial costs and our business, financial condition and results of operations could be adversely affected.

•If we are unable to transition to the new European Union IVDR regulations, we could lose the ability to serve the European market.

•We may not be able to obtain regulatory clearance or approval of our IVD products, or even if approved, such products may not be approved for guideline inclusion, which could adversely our ability to realize the intended benefits of our acquisition of ArcherDX.

•One of ArcherDX's competitors has alleged that its Anchored Multiplex PCR, or AMP, chemistry and products using AMP are infringing on its intellectual property, and ArcherDX may be required to redesign the technology, obtain a license, cease using the AMP chemistry altogether and/or pay significant damages, among other consequences, any of which would have a material adverse effect on ArcherDX's business as well as our financial condition and results of operations, and the intended benefits of our acquisition of ArcherDX.

•We have a large amount of debt, servicing our debt requires a significant amount of cash, and our debt service obligations may prevent us from taking actions that we would otherwise consider to be in our best interests.

Mission and strategy

Invitae's mission is to bring comprehensive genetic information into mainstream medical practice to improve the quality of healthcare for billions of people. Our goal is to aggregate a majority of the world's genetic information into a comprehensive network that enables sharing of data among network participants to improve healthcare and clinical outcomes.

We were founded on four core principles:

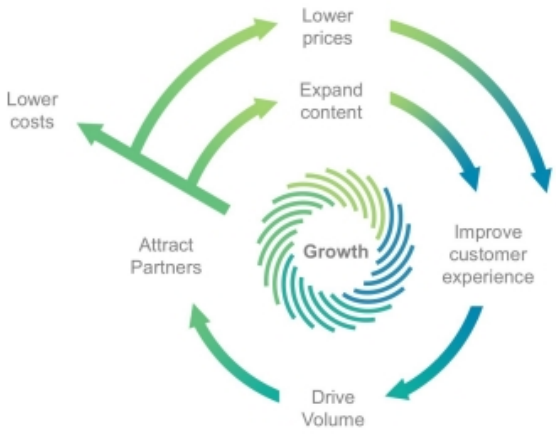
•Patients should own and control their own genetic information;

•Healthcare professionals are fundamental in ordering and interpreting genetic information;

•Driving down the price of genetic information will increase its clinical and personal utility; and

•Genetic information is more valuable when shared.

Our strategy for long-term growth centers on five key drivers of our business, which we believe work in conjunction to create a flywheel effect extending our leadership position in the new market we are building:



•**Expanding our content offering.** We intend to continue steadily adding additional testing and analysis content to the Invitae platform, ultimately leading to affordable and ongoing access to the molecular information that enables personalized medicine. The breadth and depth of our offering is a core and central contribution to an improved user experience.

•**Creating a unique user experience.** A state-of-the-art interactive platform will enhance our service offering, leverage the uniquely empowering characteristics of online sharing of genetic information and, we believe, enable a superior economic offering to clients. We intend to continue to expend substantial efforts developing, acquiring and implementing technology-driven improvements to our customers' experience. We believe that an enhanced user experience and the resulting benefits to our brand and reputation will help draw customers to us over and above our direct efforts to do so.

•**Driving volume.** We intend to increase our brand equity and visibility through a commitment to precision testing results, excellent service and a variety of education, marketing and promotional techniques, including scientific publications and presentations, sales, marketing, public relations, social media and web technology vehicles. We believe that rapidly increasing the number of customers using our platform helps us to attract partners.

•**Attracting partners.** As we add more customers to our platform, we believe our business becomes particularly attractive to potential partners that can help the patients in our network further benefit from their genetic information or that provide us access to new customers who may wish to join our network. We believe the cumulative effect of the increased volume brought by these strategic components will allow us to lower the cost of our service and expand patient access globally.

•**Lowering the cost and price of genetic information.** Our goal is to provide customers with a broad menu of genetic content at a reasonable price and rapid turn-around times in order to grow volume and, in turn, achieve greater economies of scale. As our customers and our business benefit from further cost savings, we expect that those cost savings will allow us to deliver still more comprehensive information at decreasing prices and further improve the customer experience, allowing us to reap the cumulative benefits from all of the efforts outlined above.

We seek to differentiate our service in the market by establishing an exceptional experience for our customers. To that end, we believe that elevating the needs of the customer over those of our other stakeholders is essential to our success. Thus, in our decision-making processes, we strive to prioritize, in order:

•The needs of our customers;

•Motivating our employees to serve our customers; and

•Our long-term stockholder value.

We are certain that focusing on customers as our top priority rather than short-term financial goals is the best way to build and operate an organization for maximum long-term value creation.

Business overview

We offer high-quality, comprehensive, affordable genetic testing across multiple clinical areas, including hereditary cancer, cardiology, neurology, pediatrics, personalized oncology, metabolic conditions and rare diseases. To augment our offering and realize our mission, we have acquired multiple assets and businesses, which expanded our suite of genome management offerings and established a broader entry into key genomics markets.

To date in 2021, we have completed the acquisitions of Reference Genomics, Inc. d/b/a One Codex, or One Codex, Genosity, Inc., or Genosity, Medneon LLC, or Medneon, and Ciitizen Corporation, or Ciitizen. One Codex is a data platform for applied microbial genomics. Its acquisition adds capabilities across microbiome and infectious disease testing capabilities and allows us to deliver a high-quality, low-cost, end-to-end metagenomics product (sequencing and results) and enables the development of future offerings in infectious disease, preterm birth and wellness.

Genosity is a genomics and laboratory services company offering software and laboratory solutions that enable the deployment of complex sequencing-based cancer testing. The acquisition brings Genosity's specialized capabilities onto the Invitae platform to accelerate the time to market and decentralization of Invitae's personalized oncology offerings, including somatic and germline offerings used in screening, therapy selection and personalized cancer monitoring.

The Medneon digital platform combines AI and human insights with actionable information regarding an individual's cancer risk to inform precision prevention and management over time at the point-of-care or through telemedicine.

Ciitizen is a patient-centric consumer health tech company working to build a global platform to help patients collect, organize, store and share their medical records digitally.

In October 2020, we completed the acquisition of ArcherDX, Inc., or ArcherDX, a genomics company democratizing precision oncology by offering a suite of products and services that are accurate, personal, actionable and easy to use in local settings, thereby empowering clinicians to control the sample, data, patient care and economics. As part of the acquisition we agreed to pay contingent consideration based on the achievement of five post-closing development, regulatory and revenue milestones. The first milestone was achieved in November 2020, and in June 2021, three additional milestones were achieved or deemed to be achieved. The remaining milestone is based upon receiving FDA clearance or approval of STRATAFIDE, which per the terms of the acquisition agreement, must be completed by March 31, 2022, subject to certain extensions. Based on the current development timeline, during the three months ended June 30, 2021, we determined that this milestone will not be met by the required achievement date per the acquisition agreement, although we expect to receive FDA clearance or approval at a later date.

We have experienced rapid growth. For the years ended December 31, 2020, 2019 and 2018, our revenue was $279.6 million, $216.8 million, and $147.7 million, respectively, and we incurred net losses of $602.2 million, $242.0 million, and $129.4 million, respectively. For the nine months ended September 30, 2021 and 2020, our revenue was $334.3 million and $179.2 million, respectively, and we recognized net loss of $173.9 million and $367.8 million, respectively. At September 30, 2021, our accumulated deficit was $1.5 billion. To meet the demands of scaling our business, we increased our number of employees to approximately 2,900 at September 30, 2021 from approximately 1,500 on September 30, 2020. Our sales force grew to 335 employees at September 30, 2021 from 306 at September 30, 2020.

Sales of our tests have grown significantly. In 2020, 2019 and 2018, we generated 659,000, 469,000 and 292,000 billable units, respectively. In the nine months ended September 30, 2021, we generated 842,000 billable tests compared to 421,000 billable tests in the same period in 2020. We calculate volume using billable units, which are billable events that include individual test reports released and individual reactions shipped. We refer to the set of reagents needed to perform an NGS test as a "reaction." Approximately 57% of the billable volume generated in the first nine months of 2021 were billable to patients, biopharmaceutical partners and other business-to-business customers (e.g., hospitals, clinics, medical centers), and the remainder were billable to third-party payers. Many of the gene tests on our assays are tests for which insurers reimburse. However, when we do not have reimbursement policies or contracts with private insurers, our claims for reimbursement may be denied upon submission, and we must appeal the claims. The appeals process is time consuming and expensive, and may not result in payment. Even if we are successful in achieving reimbursement, we may be paid at lower rates than if we were under contract with the third-party payer. When there is not a contracted rate for reimbursement, there is typically a greater payment requirement from the patient that may result in further delay in payment for these tests.

We expect to incur operating losses for the near term as we continue to invest in our business to achieve our revenue growth objectives, including expansion of our platform to capture the broad potential of genetics across healthcare and expansion into new laboratory and production facilities, and expect we will need to raise additional capital in order to fund our operations. If we are unable to achieve these objectives and successfully manage our costs, we may not be able to achieve profitability in the near term or at all.

We believe that the keys to our future growth will be to increase billable volume, achieve broad reimbursement coverage for our tests from third-party payers and increase our payment amounts from other types of payers, drive down the price for genetic analysis and interpretation, steadily increase the amount of genetic content we offer, consistently improve the client experience, drive physician and patient utilization of our website for ordering and delivery of results and increase the number of strategic partners working with us to add value for our clients. We also believe that providing a unique genetic testing platform that is agnostic to stage of life or disease category will deliver unique benefits to customers, payers and other institutions that are seeking to make genetic information a standard element of healthcare decisions in the future.

Impact of COVID-19

Our billable volumes decreased significantly in the second half of March 2020 as compared to the first few months of 2020 as a result of COVID-19 and related limitations and priorities across the healthcare system. Our daily test volumes have recovered from the low in March 2020, although the current COVID-19 pandemic continues to impact our business operations and practices. While we expect that it may continue to impact our business, we experienced limited disruption during the third quarter of 2021. We have reviewed and adjusted, when necessary, for the impact of COVID-19 on our estimates related to revenue recognition and expected credit losses.

In response to the pandemic we have implemented measures to protect the health of all of our employees during this time with additional measures in place to better protect our on-site lab production and support teams. Our production facilities currently remain fully operational. While we have not experienced significant disruption in our supply chain, we have experienced supply delays as a result of the COVID-19 pandemic and have also had to obtain supplies from new suppliers. Although we do not yet know the full impact COVID-19 may have on our supply chain, we have increased our inventory on hand to respond to potential future disruptions that may occur.

Many announced healthcare guidelines call for a shift of regular physician visits and healthcare delivery activities to remote/telehealth formats. This is particularly important for patients who, despite the fall-out from COVID-19, continue to be diagnosed with critical diseases, like cancer, and for women who are pregnant or are trying to conceive. We believe our investments in new access platforms and technologies has and will continue to position us well to provide a range of testing to clinicians and patients using a “clinical care from afar” model. An example is our rollout in April 2020 of our Gia telehealth platform, which expands access to remote interaction between patients and clinicians as well as direct ordering of genetic tests. Such access helped to counteract some of the adverse in-office impacts of COVID-19, allowing continuation of key testing categories in a safe environment.

Given the unknown duration and extent of COVID-19’s impact on our business, and the healthcare system in general, we adapted our spending and investment levels in 2020 and continue to monitor evolving market conditions, including focusing commercial execution on workflows that support remote ordering, online support and telehealth.

In March 2020, the Coronavirus Aid, Relief, and Economic Security Act, or CARES Act, was signed into law as a stimulus bill intended to bolster the economy, among other things, and provide assistance to qualifying businesses and individuals. The CARES Act included an infusion of funds into the healthcare system; in April 2020, we received $3.8 million as a part of this initiative, and in January 2021, we received an additional $2.3 million. These payments were recognized as other income, net in our consolidated statement of operations in the periods received. At this time, we are not certain of the availability, extent or impact of any future relief provided under the CARES Act.

Factors affecting our performance

Number of billable units

Our centralized test revenue is tied to the number of tests which we bill third-party payers, biopharmaceutical partners, other business-to-business customers (e.g., hospitals, clinics, medical centers), or patients. Our decentralized product revenue is based upon the number of individual reactions we ship biopharmaceutical partners and other business-to-business customers. We refer to the set of reagents needed to perform an NGS test as a "reaction," and we refer to billable events that include individual test reports released and individual reactions shipped as billable units. We typically bill for our services following delivery of the billable report derived from testing samples and interpreting the results. For units manufactured for use by customers in distributed facilities, we typically bill customers upon shipment of those units. Test orders are placed under signed requisitions or contractual agreements, as we often enter into contracts with biopharmaceutical partners, other business-to-business customers and insurance companies that include pricing provisions under which such tests are billed. We incur the expenses associated with a unit in the period in which the unit is processed regardless of when payment is received with respect to that unit. We believe the number of billable units in any period is an important indicator of the growth in our testing business, and with time, this will translate into the number of customers accessing our platform.

Number and size of research and commercial partnerships

Pharma development services revenue, which we recognize within other revenue in our consolidated statements of operations, is generated primarily from services provided to biopharmaceutical companies and other partners and is related to companion diagnostic development, clinical research, and clinical trial services across the research, development and commercialization phases of collaborations. The result of these relationships may

include the development of new targeted companion diagnostics, which underscore and expand the need for genetic testing and in some cases may lead to intellectual property and/or revenue sharing opportunities with third-party partners.

In addition to research partnerships, we also seek to grow the number of biopharmaceutical partners and other business-to-business customers for whom we provide testing technologies, analysis, supplies and expertise to institutions that provide independent testing services to customers in their respective regions.

Success obtaining and maintaining reimbursement

Our ability to increase volume and revenue will depend in part on our success achieving broad reimbursement coverage and laboratory service contracts for our tests from third-party payers and agreements with institutions and partners. Reimbursement may depend on a number of factors, including a payer's determination that a test is appropriate, medically necessary and cost-effective, as well as whether we are in contract, where we get paid more consistently and at higher rates. Because each payer makes its own decision as to whether to establish a policy or enter into a contract to reimburse for our testing services and specific tests, seeking these approvals is a time-consuming and costly process. In addition, clinicians and patients may decide not to order our tests if the cost of the test is not covered by insurance. Because we require an ordering physician to requisition a test, our revenue growth also depends on our ability to successfully promote the adoption of our testing services and expand our base of ordering clinicians. We believe that establishing coverage and obtaining contracts from third-party payers is an important factor in gaining adoption by ordering clinicians. Our arrangements for laboratory services with payers cover approximately 320 million lives, comprised of Medicare, all national commercial health plans, and Medicaid in most states, including California (Medi-Cal), our home state.

Ability to lower the costs associated with performing our tests

Reducing the costs associated with performing our genetic tests is both a focus and a strategic objective of ours. Over the long term, we will need to reduce the cost of raw materials by improving the output efficiency of our assays and laboratory processes, modifying our platform-agnostic assays and laboratory processes to use materials and technologies that provide equal or greater quality at lower cost, improve how we manage our materials, port some tests onto a next generation sequencing platform and negotiate favorable terms for our materials purchases. Our acquisition of Singular Bio, Inc. is a component of this objective, and we expect the technology acquired in this transaction, once developed, to help decrease the costs associated with our NIPS offering. We also intend to continue to design and implement hardware and software tools that are designed to reduce personnel-related costs for both laboratory and clinical operations/medical interpretation by increasing personnel efficiency and thus lowering labor costs per test. Finally, we plan to reduce the cost of providing test equipment and software to laboratories and other facilities in the United States. and internationally. Those efforts are designed to enable a more rapid expansion of genetic testing and patient access, enlarging our geographic footprint outside the United States while achieving lower costs.

Ability to expand our genetic content and create new pathways to test

We believe our focus on reducing the average cost per test will have a countervailing force - increasing the number of tests we offer, the content of each test and the means to connect our testing services with patients and physicians. We intend to continue to expand our test menus by steadily releasing additional genetic content for affordable prices, ultimately leading to affordable whole genome services. The breadth and flexibility of our offering will be a critical factor in our ability to address new markets, including internationally, for genetic testing services. Both of these, in conjunction with our continued focus on strategic partnerships, will be important to our ability to continue to grow the volume of billable tests we deliver. We have and will continue to identify new ways to connect our testing services and information to patients. These include direct patient outreach and ordering capacity, the use of automated assistants for physician customers to improve the ease of ordering and processing genetic tests and programs designed to reach underserved patient populations with genetic testing.

Investment in our business and timing of expenses

We plan to continue to invest in our genetic testing and information management business. We deploy state-of-the-art technologies in our genetic testing services, and we intend to continue to scale our infrastructure, including our testing capacity and capabilities as well as our information systems. We plan to do this through the acquisition of assets and businesses and expansion of our workforce and facilities, such as our new laboratory and production facility in North Carolina which we expect to support our continued growth by significantly expanding our testing capacity. We also expect to incur software development costs as we seek to further automate our laboratory processes and our genetic interpretation and report sign-out procedures, scale our customer service capabilities to improve our customers' experience, and expand the functionality of our website. We also expect to incur costs as we seek to provide the testing equipment and software necessary to enable decentralized genetic and genomic testing in the United States and internationally. We will incur costs related to marketing and branding as we spread our initiatives beyond our current customer base and focus on providing access to customers through our website. We plan to hire additional personnel as necessary to support anticipated growth, including software engineers, sales and marketing personnel, billing personnel, research and development personnel, medical specialists, biostatisticians and geneticists. We will also incur additional costs related to the expansion of our production facilities to accommodate growth and as we expand domestically and internationally, including increased operating costs and capital expenditures related to the buildout of our new laboratory and production facility in North Carolina. In addition, we will incur ongoing expenses as a result of operating as a public company. The expenses we incur may vary significantly by quarter as we focus on building out different aspects of our business.

How we recognize revenue

We generally recognize revenue on an accrual basis, which is when a customer obtains control of the promised goods or services, typically a test report. Accrual amounts recognized are based on estimates of the consideration that we expect to receive, and such estimates are adjusted and subsequently recorded until fully settled. Changes to such estimates may increase or decrease revenue recognized in future periods. Revenue from our tests may not be equal to billed amounts due to a number of factors, including differences in reimbursement rates, the amounts of patient payments, the existence of secondary payers and claim denials. Some test orders are placed under signed requisitions or contractual agreements, and we often enter into contracts with biopharmaceutical partners, other business-to-business customers and insurance companies that include pricing provisions under which such tests are billed.

Pharma development service revenues are generated primarily from custom assay design services, sample processing activities and consultative inputs, which is separate from revenue generated by any related or unrelated product component. Revenue is recognized as samples are processed or scope of work is completed based on contracted agreements with those biopharmaceutical customer companies.

Under these collaborations, we also generate revenue from achievement of milestones, provision of on-going support, and related pass-through costs and fees. We generally have distinct performance obligations for development milestones related to our development of a companion diagnostic device. We use a cost plus a margin approach to estimate the standalone value of our companion diagnostic development service performance obligations. Revenue is recognized over time using input or output methods based on our assessments of performance completed to date toward each milestone.

Financial overview

Revenue

We primarily generate revenue from testing services and sales of distributed precision oncology products. Customers are typically billed upon delivery of test results or shipment of products. We also generate revenue from development agreements, access to data, data analytics and other related services provided for biopharmaceutical partners and other parties. Our ability to increase our revenue will depend on our ability to increase our market penetration, obtain U.S. Food and Drug Administration, or FDA, and other international regulatory authority approvals on future products and services offerings, obtain contracted reimbursement coverage from third-party payers, and grow our relationships with biopharmaceutical customers.

Cost of revenue

Cost of revenue reflects the aggregate costs incurred in delivering our products and services and includes expenses for materials and supplies, personnel-related costs, freight, costs for lab services and clinical trial support, equipment and infrastructure expenses and allocated overhead including rent, information technology, equipment depreciation, amortization of acquired intangibles, and utilities. We expect cost of revenue to generally increase in line with the increase in billable volume, however, we expect a future increase in amortization of acquired intangible assets that is not dependent on billed volume. We anticipate our cost per unit for existing tests will generally decrease over time due to the efficiencies we expect to gain as volume increases and from automation and other cost reductions. These reductions in cost per unit will likely be offset by new offerings which often have a higher costs per unit during the introductory phases before we are able to gain efficiencies. The cost per unit may fluctuate significantly from quarter to quarter.

Operating expenses

Our operating expenses are classified into three categories: research and development, selling and marketing, and general and administrative. For each category, the largest component is generally personnel-related costs, which include salaries, employee benefit costs, bonuses, commissions, as applicable, and stock-based compensation expense.

Research and development

Research and development expenses represent costs incurred to develop our technology and future offerings. These costs are principally for process development associated with our efforts to expand the number of genes we can evaluate, our efforts to lower the costs per unit and our development of new products to expand our platform. We have and may continue to partner with other companies to develop new technologies and capabilities; we expect to invest capital and incur significant operating costs to support these development efforts. In addition, we incur process development costs to further develop the software we use to operate our laboratories, analyze generated data, process customer orders, validate clinical activities, enable ease of customer ordering, deliver reports and automate our business processes. These costs consist of personnel-related costs, laboratory supplies and equipment expenses, consulting costs, amortization of acquired intangible assets, and allocated overhead including rent, information technology, equipment depreciation and utilities.

We expense all research and development costs in the periods in which they are incurred. We expect our research and development expenses to significantly increase as we continue our efforts to develop additional offerings, make investments to reduce costs, streamline our technology to provide patients access to testing, scale our business domestically and internationally and acquire and integrate new technologies.

Selling and marketing

Selling and marketing expenses consist of personnel-related costs, including commissions, client service expenses, advertising and marketing expenses, educational and promotional expenses, market research and analysis, and allocated overhead including rent, information technology, equipment depreciation, amortization of acquired intangibles, and utilities. We expect our selling and marketing expenses to increase as we continue to build our brand and focus on advertising our products and services.

General and administrative

General and administrative expenses include executive, finance and accounting, billing and collections, legal and human resources functions as well as other administrative costs. These expenses include personnel-related costs; audit, accounting and legal expenses; consulting costs; allocated overhead including rent, information technology, equipment depreciation, and utilities; costs incurred in relation to our co-development agreements; and post-combination expenses incurred in relation to companies we acquire. We expect our general and administrative expenses to generally increase as we support continued growth of operations.

Change in fair value of contingent consideration

Changes in fair value of contingent consideration are adjustments related to contingent consideration acquired primarily through business combinations. We expect these expenses to fluctuate significantly period to period due to fair value adjustments that are dependent on many factors, including the value of our common stock and our assessment of the probability of meeting certain acquisition-related milestones within the terms of the respective acquisition agreements, including certain prescribed deadlines for achievement.

Other income (expense), net

Other income (expense), net, primarily consists of adjustments to the fair value of our stock payable liabilities arising from business combinations, and we expect it to fluctuate significantly from period to period due to the volatility of our common stock. Other income (expense), net also includes income generated from our cash equivalents and marketable securities and amounts received under the CARES Act.

Interest expense

Interest expense is primarily attributable to interest incurred related to our debt and finance leases. See Note 8, “Commitments and contingencies” in Notes to Consolidated Financial Statements in Part I, Item 1 of this Quarterly Report for more details.

Income tax benefit

Since we generally establish a full valuation allowance against our deferred tax balances, our income tax benefit primarily consists of tax impacts of our deferred income tax assessments resulting from our acquisitions.

Critical accounting policies and estimates

Management’s discussion and analysis of our financial condition and results of operations is based on our consolidated financial statements, which have been prepared in accordance with U.S. generally accepted accounting principles, or U.S. GAAP. The preparation of these financial statements requires us to make judgments, estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements, as well as the reported revenue generated and expenses incurred during the reporting periods. We evaluate our estimates on an ongoing basis. Our estimates are based on current facts, our historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions and any such differences may be material. We believe that our accounting policies are critical to understanding our historical and future performance, as these policies relate to the more significant areas involving management’s judgments and estimates.

There have been no material changes to our critical accounting policies and estimates as compared to the critical accounting policies and estimates described in our Annual Report on Form 10-K for the fiscal year ended December 31, 2020. See Note 2, "Summary of significant accounting policies" in the Notes to Condensed Consolidated Financial Statements for information regarding recent accounting pronouncements.

Results of operations

Three Months Ended September 30, 2021 and 2020

The following sets forth our consolidated statements of operations data for each of the periods indicated (in thousands, except percentage changes). Our historical results are not necessarily indicative of our results of operations to be expected for any future period.

	Three Months Ended September 30,		Dollar Change	% Change
	2021	2020		
Revenue:				
Test revenue	$ 111,676	$ 67,326	$ 44,350	66%
Other revenue	2,719	1,402	1,317	94%
Total revenue	114,395	68,728	45,667	66%
Cost of revenue	87,741	46,643	41,098	88%
Research and development	97,511	37,802	59,709	158%
Selling and marketing	55,501	37,800	17,701	47%
General and administrative	86,820	27,810	59,010	212%
Change in fair value of contingent consideration	(19,866)	(504)	(19,362)	N/M
Loss from operations	(193,312)	(80,823)	(112,489)	139%
Other income (expense), net	3,357	(15,771)	19,128	(121)%
Interest expense	(14,069)	(6,308)	(7,761)	123%
Net loss before taxes	(204,024)	(102,902)	(101,122)	98%
Income tax benefit	(5,848)	-	(5,848)	(100)%
Net loss	$ (198,176)	$ (102,902)	$ (95,274)	93%

Revenue

The increase in total revenue of $45.7 million for the three months ended September 30, 2021 compared to the same period in 2020 was due primarily to increased billable volume due to growth in our business as well as due to businesses acquired. Billable volume increased to approximately 296,000 in the three months ended September 30, 2021 compared to 157,000 in the same period of 2020, an increase of 89 percent, due to growth in the business. Average revenue per unit decreased to $377 per unit in the three months ended September 30, 2021 compared to $429 per unit in the comparable prior period primarily due to changes in payer and product mix, the impact of business acquisitions and reductions in pricing for some payers as we focus on providing cost effective genetic testing.

Cost of revenue

The increase in the cost of revenue of $41.1 million for the three months ended September 30, 2021 compared to the same period in 2020 was primarily due to increased billable volume, the impact of business acquisitions, and charges related to excess inventory, partially offset by the effect of cost efficiencies. Cost per unit was $296 in the three months ended September 30, 2021 compared to $297 for the same period in 2020. The cost per unit slightly decreased primarily due to better cost absorption and operations productivity. These decreases were partially offset by an increase in amortization of acquired intangible assets of $8.7 million, an increase in write downs of certain inventory items of $2.9 million, as well as changes in product mix.

Research and development

The increase in research and development expense of $59.7 million for the three months ended September 30, 2021 compared to the same period in 2020 was due to growth in the business as well as the impact of business acquisitions. The increase primarily relates to increases in personnel-related expenses of $22.7 million largely due to personnel acquired via acquisition, $11.2 million in allocations from primarily cost of revenue personnel allocations to research and development, $9.8 million in professional fees, $7.2 million in lab-related expenses due primarily to increased costs related to lab supplies, $4.3 million in technology costs, and $2.0 million in depreciation and amortization costs.

Selling and marketing

The increase in selling and marketing expense of $17.7 million for the three months ended September 30, 2021 compared to the same period in 2020 was due primarily to the growth of the business and principally consisted of increases in personnel-related costs of $9.1 million primarily reflecting increased headcount and includes an increase in sales commissions of $1.6 million, marketing costs of $4.1 million, travel-related costs of $1.4 million, depreciation and amortization expense of $0.9 million, technology costs of $0.4 million, and professional fees of $0.2 million.

General and administrative

The increase in general and administrative expense of $59.0 million for the three months ended September 30, 2021 compared to the same period in 2020 was due principally to growth in the business which resulted in an increase of $40.2 million in legal and accounting services primarily due to increased acquisition-related transaction costs, personnel-related costs by $10.6 million, $5.3 million in occupancy expense, $5.2 million in professional fees and $3.7 million in information technology expenses for software licenses and related costs.

Change in fair value of contingent consideration

The increase in the change in fair value of contingent consideration of $19.4 million for the three months ended September 30, 2021 compared to the same period in 2020 was due principally to adjustments to decrease our contingent consideration liability primarily related to our acquisition of ArcherDX.

Other income (expense), net

The increase in other income, net of $19.1 million for the three months ended September 30, 2021 compared to the same period in 2020 was primarily due to decreases in fair value adjustments related to our stock payable liabilities of $19.6 million due to the decrease in the price of our common stock, partially offset by a decrease of amounts received under the CARES Act.

Interest expense

The increase in interest expense of $7.8 million for the three months ended September 30, 2021 compared to the same period in 2020 was primarily due to increased debt outstanding compared to the prior year period, partially offset by the impact of the adoption of ASU 2020-06, which reduced the interest expense recognized related to our convertible senior notes during 2021.

Income tax benefit

The increase in income tax benefit of $5.8 million was primarily due to the net deferred tax liabilities assumed in connection with our acquisition of Ciitizen in September 2021, while there was no similar income tax benefit in the prior year period.

Nine Months Ended September 30, 2021 and 2020

The following sets forth our consolidated statements of operations data for each of the periods indicated (in thousands, except percentage changes). Our historical results are not necessarily indicative of our results of operations to be expected for any future period.

	Nine Months Ended September 30,		Dollar Change	% Change
	2021	2020		
Revenue:				
Test revenue	$ 322,448	$ 175,503	$ 146,945	84%
Other revenue	11,880	3,664	8,216	224%
Total revenue	334,328	179,167	155,161	87%
Cost of revenue	252,563	130,017	122,546	94%
Research and development	284,323	168,433	115,890	69%
Selling and marketing	163,705	119,440	44,265	37%
General and administrative	197,640	77,638	120,002	155%
Change in fair value of contingent consideration	(386,836)	4,328	(391,164)	N/M
Loss from operations	(177,067)	(320,689)	143,622	(45)%
Other income (expense), net	9,846	(32,499)	42,345	(130)%
Interest expense	(35,869)	(17,244)	(18,625)	108%
Net loss before taxes	(203,090)	(370,432)	167,342	(45)%
Income tax benefit	(29,208)	(2,600)	(26,608)	N/M
Net loss	$ (173,882)	$ (367,832)	$ 193,950	(53)%

Revenue

The increase in total revenue of $155.2 million for the nine months ended September 30, 2021 compared to the same period in 2020 was due primarily to increased billable volume product mix and pricing due to growth in our business and due to businesses acquired. Billable volume increased to 842,000 in the nine months ended September 30, 2021 compared to 421,000 in the same period of 2020, an increase of 100 percent, due to growth in the business as well as the impact of COVID-19 on billable volume in the prior year period. Average revenue per test decreased to $383 per test in the nine months ended September 30, 2021 compared to $417 per test in the comparable prior period primarily due to changes in payer and product mix, as well as reductions in pricing for some payers as we focus on providing cost effective genetic testing.

Cost of revenue

The increase in the cost of revenue of $122.5 million for the nine months ended September 30, 2021 compared to the same period in 2020 was primarily due to increased billable volume, the impact of business acquisitions, and an increase in certain inventory reserves, partially offset by the effect of cost efficiencies. Cost per unit was $300 in the nine months ended September 30, 2021 compared to $309 for the same period in 2020. The decrease in cost per unit in the nine months ended September 30, 2021 was primarily attributable to lower billable volume during the prior year period as a result of COVID-19 partially offset by an increase in amortization of acquired intangible assets of $22.4 million, an increase in write downs of certain inventory items of $9.9 million, as well as changes in product mix.

Research and development

The increase in research and development expense of $115.9 million for the nine months ended September 30, 2021 compared to the same period in 2020 was due to the growth of the business as well as the impact of business acquisitions and primarily relates to increases in personnel-related expenses of $44.7 million, $22.1 million in lab-related expenses due primarily to increased costs related to lab services and supplies, $20.2 million in professional fees, $9.8 million related to allocations from other functional areas including facilities and IT, $9.3 million in technology costs, and $5.5 million in depreciation and amortization expense.

Selling and marketing

The increase in selling and marketing expense of $44.3 million for the nine months ended September 30, 2021 compared to the same period in 2020 was due primarily to the growth of the business and our increased spending on sales initiatives subsequent to our cut backs in the second quarter of 2020 as a response to COVID-19. The increase in selling and marketing expenses principally consisted of the following elements: personnel-related costs increased by $32.1 million reflecting increased headcount and sales commissions of $5.7 million; allocated expenses primarily from facilities and IT increased by $3.5 million; $2.7 million in depreciation and amortization; marketing expenses for branding initiatives and advertising by $2.2 million; and an increase in technology expense by $1.5 million.

General and administrative

The increase in general and administrative expense of $120.0 million for the nine months ended September 30, 2021 compared to the same period in 2020 was due primarily to costs due to the growth of the business and the effect of our business acquisitions, including: personnel-related costs by $57.2 million which includes stock-based compensation of $34.0 million, which was primarily due to the acceleration of certain awards granted in our acquisition of ArcherDX offset by a reduction in stock-based compensation due to the reduction in likelihood of completing a development milestone within the timeframe prescribed in the acquisition agreement; legal and accounting services by $50.8 million; occupancy costs by $11.9 million; information technology costs by $8.4 million due to software licenses and related expenses; and professional fees by $6.5 million. These costs were partially offset by a decrease of $17.2 million in allocations of technology and facilities-related expenses to other functional areas.

Change in fair value of contingent consideration

The increase in the change in fair value of contingent consideration of $391.2 million for the nine months ended September 30, 2021 compared to the same period in 2020 was due principally to adjustments to decrease our contingent consideration liability related to ArcherDX resulting from a decrease in the value of our common stock and the removal of our contingent consideration liability relating to the outstanding milestone for FDA clearance or approval of STRATAFIDE due to our determination that this milestone will not be achieved in the timeframe prescribed in the acquisition agreement, although we expect to receive FDA clearance or approval at a later date.

Other income (expense), net

The increase in other income, net of $42.3 million for the nine months ended September 30, 2021 compared to the same period in 2020 was due principally to fair value adjustments related to our stock payable liabilities of $47.1 million due to the decrease in the price of our common stock, partially offset by amounts received under the CARES Act and the net changes in amounts recognized related to our marketable securities.

Interest expense

The increase in interest expense of $18.6 million for the nine months ended September 30, 2021 compared to the same period in 2020 was due principally to increased debt outstanding as compared to the prior year period, partially offset by the impact of the adoption of ASU 2020-06, which reduced the interest expense recognized related to our convertible senior notes during 2021.

Income tax benefit

The increase in income tax benefit of $26.6 million was due to the net deferred tax liabilities assumed in connection with our acquisitions of One Codex, Genosity and Ciitizen in 2021 as compared to only $2.6 million from our acquisition of YouScript in April 2020.

Liquidity and capital resources

Liquidity and capital expenditures

We have generally incurred net losses since our inception. For the nine months ended September 30, 2021 and 2020, we had net losses of $173.9 million and $367.8 million, respectively, and we expect to incur additional losses in the future. At September 30, 2021, we had an accumulated deficit of $1.5 billion. While our revenue has increased over time, we may never achieve revenue sufficient to offset our expenses.

Since inception, our operations have been financed primarily by fees collected from our customers, net proceeds from sales of our capital stock as well as borrowing from debt facilities and the issuance of convertible senior notes.

In April 2020, we issued, in an underwritten public offering, an aggregate of 20.4 million shares of our common stock at a price of $9.00 per share, for gross proceeds of $184.0 million and net proceeds of $173.0 million. In 2020, we issued 3.6 million shares of common stock at an average price of $26.33 per share in an "at the market" offering for aggregate proceeds of $93.7 million and net proceeds of $90.7 million. In January 2021, we issued, in an underwritten public offering, an aggregate of 8.9 million shares of our common stock at a price of $51.50 per share, for gross proceeds of $460.0 million and net proceeds of $434.3 million.

In September 2019, we issued $350.0 million of aggregate principal amount of convertible senior notes due 2024, which bear cash interest at a rate of 2.0% per year. Also in September 2019, we used the funds received through the issuance of our convertible senior notes due 2024 to settle our Note Purchase Agreement we entered into in November 2018. In April 2021, we issued $1.2 billion of aggregate principal amount of convertible senior notes due 2028, which bear cash interest at a rate of 1.5% per year.

In October 2020 in connection with our acquisition of ArcherDX, we issued $275.0 million of our common stock in a private placement at a price of $16.85 per share to a syndicate of life sciences investors. We also entered into a credit facility to borrow $135.0 million. The private placement and credit facility closed concurrently with the merger in October 2020. The terms of this credit facility restrict our ability to incur certain indebtedness, pay dividends, make acquisitions and take other actions.

At September 30, 2021 and December 31, 2020, we had $1.3 billion and $360.7 million, respectively, of cash, cash equivalents, restricted cash and marketable securities.

Our primary uses of cash are to fund our operations as we continue to grow our business, enter into partnerships and potentially to acquire businesses and technologies. Cash used to fund operating expenses is affected by the timing of when we pay expenses, as reflected in the change in our outstanding accounts payable and accrued expenses.

We have incurred substantial losses since inception, and we expect to continue to incur losses in the future. We believe our existing cash, cash equivalents and marketable securities as of September 30, 2021 and fees collected from the sale of our products and services will be sufficient to meet our anticipated cash requirements for at least the next 12 months.

We may need or choose to raise additional funding to finance operations prior to achieving profitability or should we make additional acquisitions. We regularly consider fundraising opportunities and expect to determine the timing, nature and size of future financings based upon various factors, including market conditions and our operating plans. We may in the future elect to finance operations by selling equity or debt securities or borrowing money. We also may elect to finance future acquisitions. If we issue equity securities, dilution to stockholders may result. Any equity securities issued may also provide for rights, preferences or privileges senior to those of holders of our common stock. If we raise funds by issuing additional debt securities, these debt securities would have rights, preferences and privileges senior to those of holders of our common stock. In addition, the terms of additional debt securities or borrowings could impose significant restrictions on our operations. If additional funding is required, there can be no assurance that additional funds will be available to us on acceptable terms on a timely basis, if at all. If we are unable to obtain additional funding when needed, we may need to curtail planned activities to reduce costs. Doing so will likely have an unfavorable effect on our ability to execute on our business plan and have an adverse effect on our business, results of operations and future prospects.

The following table summarizes our cash flows (in thousands):

	Nine Months Ended September 30,	
	2021	2020
Net cash used in operating activities	$ (383,897)	$ (184,920)
Net cash used in investing activities	(374,583)	(88,291)
Net cash provided by financing activities	1,558,909	228,760
Net increase (decrease) in cash, cash equivalents and restricted cash	$ 800,429	$ (44,451)

Cash flows from operating activities

For the nine months ended September 30, 2021, cash used in operating activities of $383.9 million principally resulted from our net loss of $173.9 million, non-cash charges of remeasurements of liabilities in connection with business combinations of $396.0 million, primarily relating to ArcherDX development milestones and a $29.2 million income tax benefit primarily generated from our acquisitions of One Codex, Genosity and Ciitizen. These were partially offset by non-cash charges of $131.8 million for stock-based compensation, $56.8 million for depreciation and amortization, $10.4 million for amortization of debt discount and issuance costs related to our outstanding debt and $7.9 million of post-combination expense primarily comprised of hold-back cash consideration related to our acquisition of Ciitizen and the acceleration of unvested equity from our acquisition of One Codex. The net effect on cash of changes in net operating assets was an increase of cash of $1.0 million.

For the nine months ended September 30, 2020, cash used in operating activities of $184.9 million principally resulted from our net loss of $367.8 million and a $2.6 million income tax benefit generated from our acquisition of YouScript, partially offset by non-cash charges of $102.3 million for stock-based compensation, remeasurements of liabilities in connection with business combinations of $42.4 million, $23.0 million for depreciation and amortization and $11.1 million for amortization of debt discount and issuance costs related to our Convertible Senior Notes. The net effect on cash of changes in net operating assets was an increase of cash of $7.2 million.

Cash flows from investing activities

For the nine months ended September 30, 2021, cash used in investing activities of $374.6 million was due primarily to net cash used to acquire One Codex, Genosity and Ciitizen of $239.8 million, net purchases of marketable securities of $97.9 million and cash used for purchases of property and equipment of $35.5 million.

For the nine months ended September 30, 2020, cash used in investing activities of $88.3 million was due to net cash used to acquire Diploid, Genelex and YouScript of $57.6 million, net purchases of marketable securities of $14.7 million and cash used for purchases of property and equipment of $14.0 million.

Cash flows from financing activities

For the nine months ended September 30, 2021, cash provided by financing activities of $1.6 billion primarily consisted of net proceeds from the issuance of our 2028 Notes of $1.1 billion and the public offering of common stock of $434.3 million as well as cash received from issuances of common stock of $15.8 million.

For the nine months ended September 30, 2020, cash provided by financing activities of $228.8 million consisted of net proceeds from the public offerings of common stock of $217.5 million, cash received from issuances of common stock of $9.1 million, partially offset by finance lease principal payments of $1.5 million.

Contractual obligations

The following table summarizes our contractual obligations, including interest, as of September 30, 2021 (in thousands):

Contractual obligations:	Remainder of 2021	2022 and 2023	2024 and 2025	2026 and beyond	Total
Operating leases	$ 4,886	$ 7,998	$ 52,860	$ 131,621	$ 197,365
Finance leases	1,000	8,570	1,806	-	11,376
Convertible senior notes	-	-	349,996	1,150,000	1,499,996
2020 Term Loan	-	-	135,000	-	135,000
Purchase commitments	8,527	49,345	8,825	-	66,697
Total	$ 14,413	$ 65,913	$ 548,487	$ 1,281,621	$ 1,910,434

See Note 8, "Commitments and contingencies" in the Notes to Condensed Consolidated Financial Statements for additional details regarding our leases, convertible senior notes, 2020 Term Loan and purchase commitments.

Off-balance sheet arrangements

We have not entered into any off-balance sheet arrangements.

Recent accounting pronouncements

See “Recent accounting pronouncements” in Note 2, “Summary of significant accounting policies” in the Notes to Condensed Consolidated Financial Statements included elsewhere in this report for a discussion of recently adopted accounting pronouncements and accounting pronouncements not yet adopted, and their expected effect on our financial position and results of operations.

ITEM 3. Quantitative and Qualitative Disclosures About Market Risk.

We are exposed to market risks in the ordinary course of our business. These risks primarily relate to interest rates. Our cash, cash equivalents, restricted cash and marketable securities totaled $1.3 billion at September 30, 2021, and consisted primarily of bank deposits, money market funds, U.S. treasury notes, and U.S. government agency securities. Such interest-bearing instruments carry a degree of risk; however, because our investments are primarily high-quality credit instruments with short-term durations with high-quality institutions, we have not been exposed to, nor do we anticipate being exposed to, material risks due to changes in interest rates. At September 30, 2021, a hypothetical 1.0% (100 basis points) increase or decrease in interest rates would not have resulted in a material change in the fair value of our cash equivalents and marketable securities. Fluctuations in the value of our cash equivalents and marketable securities caused by a change in interest rates (gains or losses on the carrying value) are recorded in other comprehensive gain (loss) and are realized if we sell the underlying securities prior to maturity.

Our 2020 Term Loan bears interest at an annual rate equal to three-month LIBOR, subject to a 2.00% LIBOR floor, plus a margin of 8.75% and is therefore sensitive to changes in interest rates. If three-month LIBOR can no longer be determined or if the applicable governmental authority ceases to supervise or sanction such rates, then we shall endeavor to agree with the administrative agent, an alternate rate of interest that gives due consideration to the then prevailing market convention for determining interest for comparable loans in the United States; provided that until such alternative rate of interest is agreed, the 2020 Term Loan shall bear interest at the *Wall Street Journal* Prime Rate. We currently do not use interest rate derivative instruments to manage our exposure to interest rate fluctuations.

Although our convertible senior notes are based on a fixed rate, changes in interest rates could impact their fair market value. As of September 30, 2021, the fair market value of the convertible senior notes due 2024 and due 2028 was $429.5 million and $1.2 billion respectively. For additional information about the convertible senior notes, see Note 8, “Commitments and contingencies” in Notes to Condensed Consolidated Financial Statements in Part I, Item 1 of this Quarterly Report.

ITEM 4. Controls and Procedures.

(a) Evaluation of disclosure controls and procedures

We maintain “disclosure controls and procedures,” as such term is defined in Rule 13a-15(e) under the Securities Exchange Act of 1934, or Exchange Act, that are designed to ensure that information required to be disclosed by us in reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in Securities and Exchange Commission rules and forms, and that such information is accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate, to allow timely decisions regarding required disclosure. In designing and evaluating our disclosure controls and procedures, management recognized that disclosure controls and procedures, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the disclosure controls and procedures are met. Our disclosure controls and procedures have been designed to meet reasonable assurance standards. Additionally, in designing disclosure controls and procedures, our management necessarily was required to apply its judgment in evaluating the cost-benefit relationship of possible disclosure controls and procedures. The design of any disclosure controls and procedures also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions.

Based on their evaluation as of the end of the period covered by this Quarterly Report on Form 10-Q, our Chief Executive Officer (our principal executive officer) and Chief Financial Officer (our principal financial officer) have concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

(b) Changes in internal control over financial reporting

During the quarterly period covered by this Quarterly Report on Form 10-Q, there were no changes in our internal control over financial reporting that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II - Other Information

ITEM 1. Legal Proceedings.

For discussion of legal matters as of September 30, 2021, see Note 8, "Commitments and contingencies" in Notes to Consolidated Financial Statements in Part I, Item 1 of this report, which is incorporated to this item by reference.

ITEM 1A. Risk Factors.

Risks related to our business and strategy

We face risks related to health epidemics, including the recent COVID-19 pandemic, which could have a material adverse effect on our business and results of operations.

Our business has been and could continue to be adversely affected by a widespread outbreak of contagious disease, including the recent pandemic of respiratory illness caused by a novel coronavirus known as COVID-19. Global health concerns relating to COVID-19 have negatively affected the macroeconomic environment, and the pandemic has significantly increased economic volatility and uncertainty.

The pandemic has resulted in government authorities implementing numerous measures to try to contain the virus, such as travel bans and restrictions, quarantines, shelter-in-place or stay-at-home orders, and business shutdowns. For example, some of our personnel located at our headquarters and other offices in California, elsewhere in the United States and in other countries, have been subject to shelter-in-place or stay-at-home orders from state and local governments. These measures have adversely impacted and may further impact our employees and operations and the operations of our customers, suppliers and business partners, and may continue to negatively impact spending patterns, payment cycles and insurance coverage levels. These measures have adversely affected and may continue to adversely affect demand for our tests. In 2020, many of our customers, including hospitals and clinics, suspended non-emergency appointments and services, which resulted in a significant decrease in our test volume. Travel bans, restrictions and border closures have also impacted our ability to ship tests to and receive samples from our customers. While some of these measures have been lifted, they may be implemented again if COVID-19 is not contained or returns. These measures have adversely affected and may continue to adversely affect our test volume, sales activities and results of operations.

The spread of COVID-19 caused us to modify our business practices (including employee travel, mandating that all non-essential personnel work from home, temporary closures of our offices, cancellation of physical participation in sales activities, meetings, events and conferences and increasing inventories of certain supplies because, although we have not experienced significant disruption in our supply chain, we have experienced supply delays as a result of the COVID-19 pandemic and have also had to obtain supplies from new suppliers). We may take further actions as may be required by government authorities or that we determine are in the best interests of our employees, customers and business partners. Such actions have impacted our ability to fully integrate businesses we have acquired and may impact those we may acquire in the future. There is no certainty that such actions will be sufficient to mitigate the risks posed by the virus or otherwise be satisfactory to government authorities. If significant portions of our workforce are unable to work effectively, including due to illness, quarantines, social distancing, government actions or other restrictions in connection with COVID-19, our operations will be impacted.

The extent to which COVID-19 continues to impact our business, results of operations and financial condition will depend on future developments, which are highly uncertain and cannot be predicted, including, but not limited to, the duration and spread of the pandemic, the actions to contain the virus and treat its impact, and how quickly and to what extent normal economic and operating activities can resume. COVID-19 could limit the ability of our customers, suppliers and business partners to perform, including third-party payers' ability to make timely payments to us during and following the pandemic. Some of our biopharmaceutical partners have been impacted by COVID-19, which has delayed certain programs and impacted the timing of our revenue. We have also experienced and may continue to experience a shortage of, or delays in, laboratory supplies and equipment, or a suspension of services from other laboratories or third parties. Even after COVID-19 has subsided, we may continue to experience an adverse impact to our business as a result of its global economic impact, including any recession that has occurred or may occur in the future, and loss of health insurance coverage resulting from pandemic-related job losses.

Specifically, difficult macroeconomic conditions, such as decreases in per capita income and level of disposable income, increased and prolonged unemployment or a decline in consumer confidence as a result of COVID-19, as well as limited or significantly reduced points of access of our tests, could have a material adverse effect on the demand for our tests. Under difficult economic conditions, consumers may seek to reduce discretionary spending by forgoing our tests. Decreased demand for our tests, particularly in the United States, has negatively affected and could continue to negatively affect our overall financial performance. Because a significant portion of our revenue is concentrated in the United States, where the impact of COVID-19 has been significant, COVID-19 has had and could continue to have a disproportionately negative impact on our business and financial results.

There are no comparable recent events which may provide guidance as to the effect of the spread of COVID-19 and a pandemic, and, as a result, the ultimate impact of COVID-19 or a similar health epidemic is highly uncertain and subject to change. We do not yet know the full extent of COVID-19's impact on our business, our operations, or the global economy as a whole. However, the effects could have a material impact on our results of operations, and we continue to monitor the situation closely.

To the extent the COVID-19 pandemic continues to adversely affect our business and financial results, it may also have the effect of heightening many of the other risks described in this section.

We expect to continue incurring significant losses, and we may not successfully execute our plan to achieve or sustain profitability.

We have incurred substantial losses since our inception. For the nine months ended September 30, 2021 and 2020, we had net losses of $173.9 million and $367.8 million, respectively. For the years ended December 31, 2020, 2019 and 2018, our net losses were $602.2 million, $242.0 million and $129.4 million, respectively. At September 30, 2021, our accumulated deficit was $1.5 billion. While our revenue has increased over time, we expect to continue to incur significant losses as we invest in our business. We incurred research and development expenses of $284.3 million and $168.4 million for the nine months ended September 30, 2021 and 2020, respectively, and selling and marketing expenses of $163.7 million and $119.4 million for the nine months ended September 30, 2021 and 2020, respectively. We incurred research and development expenses of $240.6 million, $141.5 million and $63.5 million in 2020, 2019 and 2018, respectively, and selling and marketing expenses of $168.3 million, $122.2 million and $74.4 million in 2020, 2019 and 2018, respectively. We expect these losses may increase as we focus on scaling our business and operations and expanding our testing capabilities, which may also increase our operating expenses, and we have experienced and may continue to experience decreases in test volume due to the impact of COVID-19. In addition, as a result of the integration of acquired businesses, we may be subject to unforeseen or additional expenditures, costs or liabilities, including costs and potential liabilities associated with litigation. Our prior losses and expected future losses have had and may continue to have an adverse effect on our stockholders' equity, working capital and stock price. Our failure to achieve and sustain profitability in the future would negatively affect our business, financial condition, results of operations and cash flows, and could cause the market price of our common stock to decline.

We began operations in January 2010 and commercially launched our initial assay in late November 2013; accordingly, we have a relatively limited operating history upon which you can evaluate our business and prospects. Our limited commercial history makes it difficult to evaluate our current business and makes predictions about our future results, prospects or viability subject to significant uncertainty. Our prospects must be considered in light of the risks and difficulties frequently encountered by companies in their early stage of development, particularly companies in new and rapidly evolving markets such as ours. These risks include an evolving and unpredictable business model and the management of growth. To address these risks, we must, among other things, increase our customer base; continue to implement and successfully execute our business and marketing strategy; identify, acquire and successfully integrate companies, assets or technologies in areas that are complementary to our business strategy; successfully enter into other strategic collaborations or relationships; obtain access to capital on acceptable terms and effectively utilize that capital; identify, attract, hire, retain, motivate and successfully integrate additional employees; continue to expand, automate and upgrade our laboratory, technology and data systems; obtain, maintain and expand coverage and reimbursement by healthcare payers; obtain and maintain sufficient payment by partners, institutions and individuals; provide rapid test turnaround times with accurate results at low prices; provide superior customer service; and respond to competitive developments. We cannot assure you that we will be successful in addressing these risks, and the failure to do so could have a material adverse effect on our business, prospects, financial condition and results of operations.

Our inability to raise additional capital on acceptable terms in the future may limit our ability to develop and commercialize new tests and expand our operations.

We expect capital expenditures and operating expenses to increase over the next several years as we expand our infrastructure, commercial operations, research and development and selling and marketing activities and pursue and integrate acquisitions. We may raise additional capital to finance operations prior to achieving profitability, or should we make additional acquisitions. We may seek to raise additional capital through equity offerings, debt financings, collaborations or licensing arrangements. Additional funding may not be available to us on acceptable terms, or at all. In addition, the terms of our credit agreement restrict our ability to incur certain indebtedness and issue certain equity securities. If we raise funds by issuing equity securities, dilution to our stockholders would result. Any equity securities issued also may provide for rights, preferences or privileges senior to those of holders of our common stock. The terms of debt securities issued or borrowings, if available, could impose significant restrictions on our operations.

The incurrence of additional indebtedness or the issuance of certain equity securities could result in increased fixed payment obligations and could also result in restrictive covenants, such as limitations on our ability to incur additional debt or issue additional equity, limitations on our ability to acquire companies or acquire or license intellectual property rights, and other operating restrictions that could adversely affect our ability to conduct our business. In addition, the issuance of additional equity securities by us, or the possibility of such issuance, may cause the market price of our common stock to decline. In the event we enter into collaborations or licensing arrangements to raise capital, we may be required to accept unfavorable terms. These agreements may require that we relinquish or license to a third party on unfavorable terms our rights to tests we otherwise would seek to develop or commercialize ourselves, or reserve certain opportunities for future potential arrangements when we might be able to achieve more favorable terms. If we are not able to secure additional funding when needed, we may have to delay, reduce the scope of or eliminate one or more research and development programs, selling and marketing initiatives, or potential acquisitions. In addition, we may have to work with a partner on one or more aspects of our tests or market development programs, which could lower the economic value of those tests or programs to our company.

We have acquired and may continue to acquire businesses or assets, form joint ventures or make investments in other companies or technologies that could harm our operating results, dilute our stockholders' ownership, or cause us to incur debt or significant expense.

As part of our business strategy, we have pursued and expect to continue to pursue acquisitions of complementary businesses or assets, as well as technology licensing arrangements. We also may pursue strategic alliances that leverage our core technology and industry experience to expand our offerings or distribution, or make investments in other companies. Since 2017, we have acquired several companies, including companies in family health genetic information services, the patient data collection industry, the non-invasive prenatal screen offering industry, the genetic information industry and the use of artificial intelligence in such industry, the pharmacogenetic testing industry, the oncology industry and the infectious disease industry.

With respect to our acquired businesses and any acquisitions we may make in the future, we may not be able to integrate these acquisitions successfully into our existing business, and we could assume unknown or contingent liabilities. For example, if we are unable to integrate ArcherDX's technology, people and distributed products business model into our existing business, we will not realize the expected benefits of that acquisition. Any acquisitions by us also could result in significant write-offs or the incurrence of debt and contingent liabilities, any of which could harm our operating results. Furthermore, as we experienced in the past, the loss of customers, payers, partners, suppliers or key management following the completion of any acquisitions by us could harm our business. Changes in services, sources of revenue, and branding or rebranding initiatives may involve substantial costs and may not be favorably received by customers, resulting in an adverse impact on our financial results, financial condition and stock price. Integration of an acquired company or business also may require management's time and resources that otherwise would be available for ongoing development of our existing business. We may also need to divert cash from other uses to fund these integration activities and these new businesses. Ultimately, we may not realize the anticipated benefits of any acquisition, technology license, strategic alliance, joint venture or investment, or these benefits may take longer to realize than we expected.

In connection with certain of our completed acquisitions, we have agreed to pay cash and/or stock consideration that is contingent upon the achievement of specified objectives, such as development objectives, regulatory submissions, regulatory approvals and revenue related to certain products. As of the date of the applicable acquisition, we record a contingent liability representing the estimated fair value of the contingent consideration we expect to pay. On a quarterly basis, we reassess these obligations and, in the event our estimate of the fair value of the contingent consideration changes, we record increases or decreases in the fair value as an adjustment to operating expense, which could have a material impact on our results of operations. As of September 30, 2021, we accrued $1.7 million of contingent consideration, which is related to our acquisition of Genelex.

To finance any acquisitions or investments, we may raise additional funds, which could adversely affect our existing stockholders and our business. If the price of our common stock is low or volatile, we may not be able to acquire other companies for stock. In addition, our stockholders may experience substantial dilution as a result of additional securities we may issue for acquisitions. Open market sales of substantial amounts of our common stock issued to stockholders of companies we acquire could also depress our stock price. Additional funds may not be available on terms that are favorable to us, or at all.

We rely on highly skilled personnel in a broad array of disciplines and, if we are unable to hire, retain or motivate these individuals, or maintain our corporate culture, we may not be able to maintain the quality of our services or grow effectively.

Our performance, including our research and development programs and laboratory operations, largely depend on our continuing ability to identify, hire, develop, motivate and retain highly skilled personnel for all areas of our organization, including software developers, geneticists, biostatisticians, certified laboratory scientists and other scientific and technical personnel to process and interpret our genetic tests. In addition, we may need to continue to expand our sales force with qualified and experienced personnel. Competition in our industry for qualified employees is intense, and we may not be able to attract or retain qualified personnel in the future due to the competition for qualified personnel among life science and technology businesses as well as universities and public and private research institutions, particularly in the San Francisco Bay Area. In addition, our compensation arrangements, such as our equity award programs, may not always be successful in attracting new employees and retaining and motivating our existing employees. If we are not able to attract and retain the necessary personnel to accomplish our business objectives, we may experience constraints that could adversely affect our ability to scale our business, and support our research and development efforts and our clinical laboratory. We believe that our corporate culture fosters innovation, creativity and teamwork. However, as our organization grows, we may find it increasingly difficult to maintain the beneficial aspects of our corporate culture. This could negatively impact our ability to retain and attract employees and our future success.

We need to scale our infrastructure in advance of demand for our tests, and our failure to generate sufficient demand for our tests would have a negative impact on our business and our ability to attain profitability.

Our success depends in large part on our ability to extend our market position, to provide customers with high-quality test reports quickly and at a lower price than our competitors, and to achieve sufficient test volume to realize economies of scale. In order to execute our business model, we intend to continue to invest heavily in order to significantly scale our infrastructure, including our testing capacity and information systems, expand our commercial operations, customer service, billing and systems processes and enhance our internal quality assurance program. We expect that much of this growth will be in advance of demand for our tests. Our current and future expense levels are to a large extent fixed and are largely based on our investment plans and our estimates of future revenue. Because the timing and amount of revenue from our tests is difficult to forecast, when revenue does not meet our expectations, we may not be able to adjust our spending promptly or reduce our spending to levels commensurate with our revenue. Even if we are able to successfully scale our infrastructure and operations, we cannot assure you that demand for our tests will increase at levels consistent with the growth of our infrastructure. If we fail to generate demand commensurate with this growth or if we fail to scale our infrastructure sufficiently in advance of demand to successfully meet such demand, our business, prospects, financial condition and results of operations could be adversely affected.

If third-party payers, including managed care organizations, private health insurers and government health plans do not provide adequate reimbursement for our tests or we are unable to comply with their requirements for reimbursement, our commercial success could be negatively affected.

Our ability to increase the number of billable tests and our revenue will depend on our success achieving reimbursement for our tests from third-party payers. Reimbursement by a payer may depend on a number of factors, including a payer's determination that a test is appropriate, medically necessary, cost-effective and has received prior authorization. The commercial success of our distributed products, including STRATAFIDE, a pan-solid tumor in vitro diagnostic, or IVD, and our Personalized Cancer Monitoring product, or PCM, if approved, will depend on the extent to which our customers receive coverage and adequate reimbursement from third-party payers, including managed care organizations and government payers (e.g., Medicare and Medicaid).

Since each payer makes its own decision as to whether to establish a policy or enter into a contract to cover our tests, as well as the amount it will reimburse for a test, seeking these approvals is a time-consuming and costly process. In addition, the determination by a payer to cover and the amount it will reimburse for our tests will likely be made on an indication-by-indication basis. To date, we have obtained policy-level reimbursement approval or contractual reimbursement for some indications for our germline tests from most of the large commercial third-party payers in the United States, and the Centers for Medicare & Medicaid Services, or CMS, provides reimbursement for our multi-gene tests for hereditary breast and ovarian cancer-related disorders as well as colon cancer. We believe that establishing adequate reimbursement from Medicare is an important factor in gaining adoption from healthcare providers. Our claims for reimbursement from third-party payers may be denied upon submission, and we must appeal the claims. The appeals process is time consuming and expensive and may not result in payment. In cases where there is not a contracted rate for reimbursement, there is typically a greater coinsurance or copayment requirement from the patient, which may result in further delay or decreased likelihood of collection.

In cases where we have established reimbursement rates with third-party payers, we face additional challenges in complying with their procedural requirements for reimbursement. These requirements often vary from payer to payer, and we have needed additional time and resources to comply with them. We have also experienced, and may continue to experience, delays in or denials of coverage if we do not adequately comply with these requirements. Our third-party payers have also requested, and in the future may request, audits of the amounts paid to us. We have been required to repay certain amounts to payers as a result of such audits, and we could be adversely affected if we are required to repay other payers for alleged overpayments due to lack of compliance with their reimbursement policies. In addition, we have experienced, and may continue to experience, delays in reimbursement when we transition to being an in-network provider with a payer.

We expect to continue to focus our resources on increasing adoption of, and expanding coverage and reimbursement for, our current tests and any future tests we may develop or acquire. If we fail to expand and maintain broad adoption of, and coverage and reimbursement for, our tests, our ability to generate revenue could be harmed and our future prospects and our business could suffer.

We face intense competition, which is likely to intensify further as existing competitors devote additional resources to, and new participants enter, the market. If we cannot compete successfully, we may be unable to increase our revenue or achieve and sustain profitability.

With the development of next generation sequencing, the clinical genetics market is becoming increasingly competitive, and we expect this competition to intensify in the future. We face competition from a variety of sources, including:

•dozens of relatively specialized competitors focused on genetics applied to healthcare, such as Ambry Genetics, a subsidiary of Konica Minolta, Inc.; Athena Diagnostics and Blueprint Genetics, subsidiaries of Quest Diagnostics Incorporated; Baylor-Miraca Genetics Laboratories; Caris Life Sciences, Inc.; Centogene AG; Connective Tissue Gene Test LLC, a subsidiary of Health Network Laboratories, L.P.; Cooper Surgical, Inc.; Emory Genetics Laboratory, a subsidiary of Eurofins Scientific; Foundation Medicine, a subsidiary of Roche Holding AG; Fulgent Genetics, Inc.; GeneDx, a subsidiary of OPKO Health, Inc.; Guardant Health, Inc.; Integrated Genetics; Sequenom Inc.; Correlagen Diagnostics, Inc.; and MNG Laboratories, subsidiaries of Laboratory Corporation of America Holdings; Myriad Genetics, Inc.; Natera, Inc.; Perkin Elmer, Inc.; PreventionGenetics, LLC; Progenity, Inc.; and Mount Sinai Genomics, Inc. d/b/a Sema4 Genomics;

•a few large, established general testing companies with large market share and significant channel power, such as Laboratory Corporation of America Holdings and Quest Diagnostics Incorporated;

•a large number of clinical laboratories in an academic or healthcare provider setting that perform clinical genetic testing on behalf of their affiliated institutions and often sell and market more broadly; and

•a large number of new entrants into the market for genetic information ranging from informatics and analysis pipeline developers to focused, integrated providers of genetic tools and services for health and wellness including Illumina, Inc., which is also one of our suppliers.

Hospitals, academic medical centers and eventually physician practice groups and individual clinicians may also seek to perform at their own facilities the type of genetic testing we would otherwise perform for them. In this regard, continued development of equipment, reagents, and other materials as well as databases and interpretation services may enable broader direct participation in genetic testing and analysis.

Participants in closely related markets such as clinical trial or companion diagnostic testing could converge on offerings that are competitive with the type of tests we perform. Instances where potential competitors are aligned with key suppliers or are themselves suppliers could provide such potential competitors with significant advantages.

In addition, the biotechnology and genetic testing fields are intensely competitive both in terms of service and price, and continue to undergo significant consolidation, permitting larger clinical laboratory service providers to increase cost efficiencies and service levels, resulting in more intense competition.

We also face competition as a result of our 2020 acquisition of ArcherDX. In particular, ArcherDX competes with numerous companies in the life sciences research, clinical diagnostics and drug development spaces, including, among others, Natera, QIAGEN N.V., Guardant Health, Inc., Thermo Fisher, Inc., Foundation Medicine, Caris Life Sciences, Inc., Tempus, Laboratory Corporation of America, Quest Diagnostics, Inc., NeoGenomics, Inc., BioReference Laboratories, Inc. and Illumina, Inc.

We believe the principal competitive factors in our market are:

•breadth and depth of content;

•quality;

•reliability;

•accessibility of results;

•turnaround time of testing results;

•price and quality of tests;

•coverage and reimbursement arrangements with third-party payers;

•convenience of testing;

•brand recognition of test provider;

•additional value-added services and informatics tools;

•client service; and

•quality of website content.

Many of our competitors and potential competitors have longer operating histories, larger customer bases, greater brand recognition and market penetration, higher margins on their tests, substantially greater financial, technological and research and development resources, selling and marketing capabilities, lobbying efforts, and more experience dealing with third-party payers. As a result, they may be able to respond more quickly to changes in customer requirements, devote greater resources to the development, promotion and sale of their tests than we do, sell their tests at prices designed to win significant levels of market share, or obtain reimbursement from more third-party payers and at higher prices than we do. We may not be able to compete effectively against these organizations. Increased competition and cost-saving initiatives on the part of governmental entities and other third-party payers are likely to result in pricing pressures, which could harm our sales, profitability or ability to gain market share. In addition, competitors may be acquired by, receive investments from or enter into other commercial relationships with larger, well-established and well-financed companies as use of next generation sequencing for clinical diagnosis and preventative care increases. Certain of our competitors may be able to secure key inputs from vendors on more favorable terms, devote greater resources to marketing and promotional campaigns, adopt more aggressive pricing policies and devote substantially more resources to website and systems development than we can. In addition, companies or governments that control access to genetic testing through umbrella contracts or regional preferences could promote our competitors or prevent us from performing certain services. In addition, some of our competitors have obtained approval or clearance for certain of their tests from the U.S. Food and Drug Administration, or FDA. If payers decide to reimburse only for tests that are FDA-approved or FDA-cleared, or if they are more likely to reimburse for such tests, we may not be able to compete effectively unless we obtain similar approval or clearance for our tests. If we are unable to compete successfully against current and future competitors, we may be unable to increase market acceptance and sales of our tests, which could prevent us from increasing our revenue or achieving profitability and could cause our stock price to decline.

We may not be able to manage our future growth effectively, which could make it difficult to execute our business strategy.

Our expected future growth could create a strain on our organizational, administrative and operational infrastructure, including laboratory operations, quality control, technology services, customer service, marketing and sales, and management. We may not be able to maintain the quality of or expected turnaround times for our tests, or satisfy customer demand as it grows. We may need to continue expanding our sales force to facilitate our growth, and we may have difficulties locating, recruiting, training and retaining sales personnel. Our ability to manage our growth effectively will require us to continue to improve our operational, financial and management controls, as well as our reporting systems and procedures. As we grow, any failure of our controls or interruption of our production facilities or systems could have a negative impact on our business and financial operations. We plan to implement new enterprise software systems in a number of areas affecting a broad range of business processes and functional areas. The time and resources required to implement these new systems is uncertain, and failure to complete these activities in a timely and efficient manner could adversely affect our operations. Future growth in our business could also make it difficult for us to maintain our corporate culture. If we are unable to manage our growth effectively, it may be difficult for us to execute our business strategy and our business could be harmed.

Security breaches, privacy issues, loss of data and other incidents could compromise sensitive or personal information related to our business or prevent us from accessing critical information and expose us to liability, which could adversely affect our business and our reputation.

In the ordinary course of our business, we collect and store sensitive data, including protected health information, or PHI, personally identifiable information, genetic information, credit card information, intellectual property and proprietary business information owned or controlled by ourselves or our customers, payers and other parties. We manage and maintain our applications and data utilizing a combination of on-site systems, managed data center systems and cloud-based systems. We also communicate PHI and other sensitive patient data through our various customer tools and platforms. In addition to storing and transmitting sensitive data that is subject to multiple legal protections, these applications and data encompass a wide variety of business-critical information including research and development information, commercial information, and business and financial information. We face a number of risks relative to protecting this critical information, including loss of access risk, inappropriate disclosure, inappropriate modification, and the risk of our being unable to adequately monitor and modify our controls over our critical information. Any technical problems that may arise in connection with our data and systems, including those that are hosted by third-party providers, could result in interruptions to our business and operations or exposure to security vulnerabilities. These types of problems may be caused by a variety of factors, including infrastructure changes, intentional or accidental human actions or omissions, software errors, malware, viruses, security attacks, fraud, spikes in customer usage and denial of service issues. From time to time, large third-party web hosting providers have experienced outages or other problems that have resulted in their systems being offline and inaccessible. Such outages could materially impact our business and operations.

The secure processing, storage, maintenance and transmission of this critical information are vital to our operations and business strategy, and we devote significant resources to protecting such information. Although we take what we believe to be reasonable and appropriate measures, including a formal, dedicated enterprise security program, to protect sensitive information from various compromises (including unauthorized access, disclosure, or modification or lack of availability), our information technology and infrastructure may be vulnerable to attacks by hackers or viruses or breached due to employee error, malfeasance or other disruptions. For example, ArcherDX has been subject to phishing incidents, and we may experience additional incidents in the future. Any such breach or interruption could compromise our networks and the information stored therein could be accessed by unauthorized parties, altered, publicly disclosed, lost or stolen.

Further, our various customer tools and platforms are currently accessible through our online portal and/or through our mobile applications, and there is no guarantee we can protect them from a security breach. Unauthorized access, loss or dissemination could also disrupt our operations (including our ability to conduct our analyses, provide test results, bill payers or patients, process claims and appeals, provide customer assistance, conduct research and development activities, collect, process and prepare company financial information, provide information about our tests and other patient and physician education and outreach efforts through our website, and manage the administrative aspects of our business) and damage our reputation, any of which could adversely affect our business.

In addition to data security risks, we also face privacy risks. Should we actually violate, or be perceived to have violated, any privacy promises we make to patients or consumers, we could be subject to a complaint from an affected individual or interested privacy regulator, such as the FTC, a state Attorney General, an EU Member State Data Protection Authority, or a data protection authority in another international jurisdiction. This risk is heightened given the sensitivity of the data we collect.

Any security compromise that causes an apparent privacy violation could also result in legal claims or proceedings; liability under federal, state, foreign, or multinational laws that regulate the privacy, security, or breach of personal information, such as but not limited to the Health Insurance Portability and Accountability Act of 1996, or HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, or HITECH, state data security and data breach notification laws, the European Union's General Data Protection Regulation, or GDPR, and the UK Data Protection Act of 2018; and related regulatory penalties. Penalties for failure to comply with a requirement of HIPAA or HITECH vary significantly, and, depending on the knowledge and culpability of the HIPAA-regulated entity, may include civil monetary penalties of up to $1.5 million per calendar year for each provision of HIPAA that is violated. A person who knowingly obtains or discloses individually identifiable health information in violation of HIPAA may face a criminal penalty of up to $50,000 and up to one-year imprisonment. The criminal penalties increase if the wrongful conduct involves false pretenses or the intent to sell, transfer or use identifiable health information for commercial advantage, personal gain or malicious harm. Penalties for unfair or deceptive acts or practices under the FTC Act or state Unfair and Deceptive Acts and Practices, or UDAP, statutes may also vary significantly.

There has been unprecedented activity in the development of data protection regulation around the world. As a result, the interpretation and application of consumer, health-related and data protection laws in the United States, Europe and elsewhere are often uncertain, contradictory and in flux. The GDPR took effect on May 25, 2018. The GDPR applies to any entity established in the EU as well as extraterritorially to any entity outside the EU that offers goods or services to, or monitors the behavior of, individuals who are located in the EU. The GDPR imposes strict requirements on controllers and processors of personal data, including enhanced protections for "special categories" of personal data, which includes sensitive information such as health and genetic information of data subjects. The GDPR also grants individuals various rights in relation to their personal data, including the rights of access, rectification, objection to certain processing and deletion. The GDPR provides an individual with an express right to seek legal remedies if the individual believes his or her rights have been violated. Failure to comply with the requirements of the GDPR or the related national data protection laws of the member states of the EU, which may deviate from or be more restrictive than the GDPR, may result in significant administrative fines issued by EU regulators. Maximum penalties for violations of the GDPR are capped at 20M euros or 4% of an organization's annual global revenue, whichever is greater.

Additionally, the implementation of GDPR has led other jurisdictions to either amend or propose legislation to amend their existing data privacy and cybersecurity laws to resemble the requirements of GDPR. For example, on June 28, 2018, California adopted the California Consumer Privacy Act of 2018, or the CCPA. The CCPA regulates how certain for-profit businesses that meet one or more CCPA applicability thresholds collect, use, and disclose the personal information of consumers who reside in California. Among other things, the CCPA confers to California consumers the right to receive notice of the categories of personal information that will be collected by a business, how the business will use and share the personal information, and the third parties who will receive the personal information; the CCPA also confers rights to access, delete, or transfer personal information; and the right to receive equal service and pricing from a business after exercising a consumer right granted by the CCPA. In addition, the CCPA allows California consumers the right to opt out of the "sale" of their personal information, which the CCPA defines broadly as any disclosure of personal information to a third party in exchange for monetary or other valuable consideration. The CCPA also requires a business to implement reasonable security procedures to safeguard personal information against unauthorized access, use, or disclosure. California amended the law in September 2018 to exempt all PHI collected by certain parties subject to HIPAA, and further amended the law in September 2020 to clarify that de-identified data as defined under HIPAA will also be exempt from the CCPA. The California Attorney General's final regulations implementing the CCPA took effect on August 14, 2020. The CCPA provides for civil penalties for violations, as well as a private right of action for data breaches resulting from a business's failure to implement and maintain reasonable data security procedures that is expected to increase data breach litigation.

In addition, California voters recently approved the California Privacy Rights Act of 2020, or CPRA, that is scheduled to go into effect on January 1, 2023. The CPRA would, among other things, amend the CCPA to give California residents the ability to limit the use of their sensitive information, provide for penalties for CPRA violations concerning California residents under the age of 16, and establish a new California Privacy Protection Agency to implement and enforce the law. Other jurisdictions in the United States are beginning to propose laws similar to the CCPA. Some observers have noted that the CCPA could mark the beginning of a trend toward more stringent privacy legislation in the United States, which could increase our potential liability and adversely affect our business, results of operations, and financial condition.

It is possible the GDPR, CCPA and other emerging United States and international data protection laws may be interpreted and applied in a manner that is inconsistent with our practices. If so, this could result in government-imposed fines or orders requiring that we change our practices, which could adversely affect our business. In addition, these privacy laws and regulations may differ from country to country and state to state, and our obligations under these laws and regulations vary based on the nature of our activities in the particular jurisdiction, such as whether we collect samples from individuals in the local jurisdiction, perform testing in the local jurisdiction, or process personal information regarding employees or other individuals in the local jurisdiction. Complying with these various laws and regulations could cause us to incur substantial costs or require us to change our business practices and compliance procedures in a manner adverse to our business. We can provide no assurance that we are or will remain in compliance with diverse privacy and data security requirements in all of the jurisdictions in which we do business. Failure to comply with privacy and data security requirements could result in a variety of consequences, including civil or criminal penalties, litigation, or damage to our reputation, any of which could have a material adverse effect on our business.

If we are not able to continue to generate substantial demand of our tests, our commercial success will be negatively affected.

Our business model assumes that we will be able to generate significant test volume, and we may not succeed in continuing to drive adoption of our tests to achieve sufficient volumes. Inasmuch as detailed genetic data from broad-based testing panels such as our tests have only recently become available at relatively affordable prices, the continued pace and degree of clinical acceptance of the utility of such testing is uncertain. Specifically, it is uncertain how much genetic data will be accepted as necessary or useful, as well as how detailed that data should be, particularly since medical practitioners may have become accustomed to genetic testing that is specific to one or a few genes. Given the substantial amount of additional information available from a broad-based testing panel such as ours, there may be distrust as to the reliability of such information when compared with more limited and focused genetic tests. To generate further demand for our tests, we will need to continue to make clinicians aware of the benefits of our tests, including the price, the breadth of our testing options, and the benefits of having additional genetic data available from which to make treatment decisions. A lack of or delay in clinical acceptance of broad-based panels such as our tests would negatively impact sales and market acceptance of our tests and limit our revenue growth and potential profitability. Genetic testing is expensive and many potential customers may be sensitive to pricing. In addition, potential customers may not adopt our tests if adequate reimbursement is not available, or if we are not able to maintain low prices relative to our competitors. Also, we may not be successful in increasing demand for our tests through our direct channel, in which we facilitate the ordering of our genetic tests by consumers through an online network of physicians.

If we are not able to generate demand for our tests at sufficient volume, or if it takes significantly more time to generate this demand than we anticipate, our business, prospects, financial condition and results of operations could be materially harmed.

We have devoted a portion of our resources to the development and commercialization of STRATAFIDE, and to research and development activities related to our PCM product for cancer monitoring, including clinical and regulatory initiatives to obtain diagnostic clearance and marketing approval. The demand for these regulated products is unproven, and we may not be successful in achieving market awareness and demand for these products through our sales and marketing operations.

If our STRATAFIDE and PCM products and related services do not perform as expected, we may not realize the expected benefits of our recent acquisition of ArcherDX.

The success of our STRATAFIDE and PCM products depends on the market's confidence that we can provide reliable products that enable high quality diagnostic testing with high sensitivity and specificity and short turnaround times. There is no guarantee that the accuracy and reproducibility ArcherDX demonstrated in the research use only, or RUO, market will continue as we launch commercial IVD products and our product deliveries increase and product portfolio expands.

Our RUO products, STRATAFIDE and PCM products and related services use a number of complex and sophisticated biochemical and bioinformatics processes, many of which are highly sensitive to external factors. An operational, technological or other failure in one of these complex processes or fluctuations in external variables may result in sensitivity or specificity rates that are lower than we anticipate or result in longer than expected turnaround times. In addition, labs are required to validate their processes before using these products for clinical purposes. These validations are outside of our control. If our products do not perform, or are perceived to not have performed, as expected or favorably to competitive products, our consolidated operating results, reputation, and business will suffer, and we may also be subject to legal claims arising from product limitations, errors, or inaccuracies.

In addition, we plan to match our test reports for STRATAFIDE to identified mutations with FDA-approved targeted therapies or relevant clinical trials of targeted therapies. If a patient or physician who orders a test using one of our products is unable to obtain, or be reimbursed for the use of, targeted therapies because they are not indicated in the FDA-approved label for treatment, the patient is unable to enroll in an identified clinical trial due to the enrollment criteria of the trial, or some other reason, the ordering physician may conclude the test report does not contain actionable information. If physicians do not believe our products consistently generate actionable information about their patients' disease or condition, they may be less likely to use our products.

Furthermore, we cannot provide assurance that customers will always use these products in the manner in which intended. Any intentional or unintentional misuse of these products by customers could lead to substantial civil and criminal monetary and non-monetary penalties, and could result in significant legal and investigatory fees.

The future growth of our distributed products business is partially dependent upon regulatory approval and market acceptance of our IVD products, including STRATAFIDE and PCM.

We anticipate that the future success of our distributed products business will depend in large part on our ability to effectively introduce enhanced or new offerings of IVD products, such as STRATAFIDE. The development and launch of enhanced or new products and services, whether RUO or IVD, require the completion of certain clinical development and commercialization activities that are complex, costly, time-intensive and uncertain, and require us to accurately anticipate patients', providers' and, if applicable, payers' attitudes and needs and emerging technology and industry trends. This process is conducted in various stages, and each stage presents the risk that we will not achieve its goals on a timely basis, or at all.

We have limited experience commercializing IVD products. We may experience research and development, regulatory, marketing and other difficulties that could delay or prevent our introduction of enhanced or new products or new services and result in increased costs and the diversion of management's attention and resources from other business matters.

An important factor in our ability to commercialize our distributed products is collecting data that supports their value proposition. The data collected from any studies we complete may not be favorable or consistent with its existing data or may not be statistically significant or compelling to the medical community or to third-party payers seeking such data for purposes of determining coverage for these products. This is particularly true with respect to service defects and errors. Any of the foregoing could have a negative impact on our ability to commercialize our future products, which could have a material adverse effect on our ability to realize the intended benefits of our acquisition of ArcherDX.

Our success will depend on our ability to use rapidly changing genetic data to interpret test results accurately and consistently, and our failure to do so would have an adverse effect on our operating results and business, harm our reputation and could result in substantial liabilities that exceed our resources.

Our success depends on our ability to provide reliable, high-quality tests that incorporate rapidly evolving information about the role of genes and gene variants in disease and clinically relevant outcomes associated with those variants. Errors, such as failure to detect genomic variants with high accuracy, or mistakes, such as failure to identify, or incompletely or incorrectly identifying, gene variants or their significance, could have a significant adverse impact on our business.

Hundreds of genes can be implicated in some disorders, and overlapping networks of genes and symptoms can be implicated in multiple conditions. As a result, a substantial amount of judgment is required in order to interpret testing results for an individual patient and to develop an appropriate patient report. We classify variants in accordance with published guidelines as benign, likely benign, variants of uncertain significance, likely pathogenic or pathogenic, and these guidelines are subject to change. In addition, it is our practice to offer support to clinicians and geneticists ordering our tests regarding which genes or panels to order as well as interpretation of genetic variants. We also rely on clinicians to interpret what we report and to incorporate specific information about an individual patient into the physician's treatment decision.

The marketing, sale and use of our genetic tests could subject us to liability for errors in, misunderstandings of, or inappropriate reliance on, information we provide to clinicians, geneticists or patients, and lead to claims against us if someone were to allege that a test failed to perform as it was designed, if we failed to correctly interpret the test results, if we failed to update the test results due to a reclassification of the variants according to new published guidelines, or if the ordering physician were to misinterpret test results or improperly rely on them when making a clinical decision. In addition, our entry into the reproductive health and pharmacogenetic testing markets expose us to increased liability. A product liability or professional liability claim could result in substantial damages and be costly and time-consuming for us to defend. Although we maintain liability insurance, including for errors and omissions, we cannot assure you that such insurance would fully protect us from the financial impact of defending against these types of claims or any judgments, fines or settlement costs arising out of any such claims. Any liability claim, including an errors and omissions liability claim, brought against us, with or without merit, could increase our insurance rates or prevent us from securing insurance coverage in the future. Additionally, any liability lawsuit could cause injury to our reputation or cause us to suspend sales of our tests. The occurrence of any of these events could have an adverse effect on our reputation and results of operations.

Our industry is subject to rapidly changing technology and new and increasing amounts of scientific data related to genes and genetic variants and their role in disease. Our failure to develop tests to keep pace with these changes could make us obsolete.

In recent years, there have been numerous advances in methods used to analyze very large amounts of genomic information and the role of genetics and gene variants in disease and treatment therapies. Our industry has and will continue to be characterized by rapid technological change, increasingly larger amounts of data, frequent new testing service introductions and evolving industry standards, all of which could make our tests obsolete. Our future success will also depend on our ability to keep pace with the evolving needs of our customers on a timely and cost-effective basis and to pursue new market opportunities that develop as a result of technological and scientific advances. Our tests could become obsolete and our business adversely affected unless we continually update our offerings to reflect new scientific knowledge about genes and genetic variations and their role in diseases and treatment therapies.

Our success will depend in part on our ability to generate sales using our internal sales team and through alternative marketing strategies.

We may not be able to market or sell our current tests and any future tests we may develop or acquire effectively enough to drive demand sufficient to support our planned growth. We currently sell our tests primarily through our internal sales force. Historically, our sales efforts have been focused primarily on hereditary cancer and more recently on reproductive health. Our efforts to sell our tests to clinicians and patients outside of oncology may not be successful, or may be difficult to do successfully without significant additional selling and marketing efforts and expense. In addition, following the acquisition of ArcherDX, our sales efforts have expanded to include distributed products sold to laboratories. In the past, we have increased our sales force each year in order to drive our growth, and in October 2020, we increased our sales force through the acquisition of ArcherDX. In addition to the efforts of our sales force, future sales will depend in large part on our ability to develop and substantially expand awareness of our company and our tests through alternative strategies including through education of key opinion leaders, through social media-related and online outreach, education and marketing efforts, and through focused channel partner strategies designed to drive demand for our tests. We also plan to continue to spend on consumer advertising in connection with our direct channel to consumers, which could be costly. We have limited experience implementing these types of marketing efforts. We may not be able to drive sufficient levels of revenue using these sales and marketing methods and strategies necessary to support our planned growth, and our failure to do so could limit our revenue and potential profitability.

We also use a limited number of distributors to assist internationally with sales, logistics, education and customer support. Sales practices utilized by our distributors that are locally acceptable may not comply with sales practices standards required under U.S. laws that apply to us, which could create additional compliance risk. If our sales and marketing efforts are not successful outside the United States, we may not achieve significant market acceptance for our tests outside the United States, which could adversely impact our business.

Impairment in the value of our goodwill or other intangible assets could have a material adverse effect on our operating results and financial condition.

We record goodwill and intangible assets at fair value upon the acquisition of a business. Goodwill represents the excess of amounts paid for acquiring businesses over the fair value of the net assets acquired. Goodwill and indefinite-lived intangible assets are evaluated for impairment annually, or more frequently if conditions warrant, by comparing the carrying value of a reporting unit to its estimated fair value. Intangible assets with definite lives are reviewed for impairment when events or circumstances indicate that their carrying value may not be recoverable. Declines in operating results, divestitures, sustained market declines and other factors that impact the fair value of our reporting unit could result in an impairment of goodwill or intangible assets and, in turn, a charge to net income. Any such charges could have a material adverse effect on our results of operations or financial condition.

We rely on a limited number of suppliers or, in some cases, sole suppliers, for some of our laboratory instruments, materials and services, and we may not be able to find replacements or immediately transition to alternative suppliers.

We rely on a limited number of suppliers, or, in some cases, sole suppliers, including Illumina, Inc., Integrated DNA Technologies Incorporated, Qiagen N.V., Roche Holdings Ltd. and Twist Bioscience Corporation for certain laboratory substances used in the chemical reactions incorporated into our processes, which we refer to as reagents, as well as sequencers and other equipment and materials which we use in our laboratory operations. We do not have short- or long-term agreements with most of our suppliers, and our suppliers could cease supplying these materials and equipment at any time, or fail to provide us with sufficient quantities of materials or materials that meet our specifications. Our laboratory operations could be interrupted if we encounter delays or difficulties in securing these reagents, sequencers or other equipment or materials, and if we cannot obtain an acceptable substitute. Any such interruption could significantly affect our business, financial condition, results of operations and reputation. We rely on Illumina as the sole supplier of next generation sequencers and associated reagents and as the sole provider of maintenance and repair services for these sequencers. Any disruption in Illumina's operations could impact our supply chain and laboratory operations as well as our ability to conduct our tests, and it could take a substantial amount of time to integrate replacement equipment into our laboratory operations.

We believe that there are only a few other manufacturers that are currently capable of supplying and servicing the equipment necessary for our laboratory operations, including sequencers and various associated reagents. The use of equipment or materials provided by these replacement suppliers would require us to alter our laboratory operations. Transitioning to a new supplier would be time consuming and expensive, may result in interruptions in our laboratory operations, could affect the performance specifications of our laboratory operations or could require that we revalidate our tests. We cannot assure you that we will be able to secure alternative equipment, reagents and other materials, and bring such equipment, reagents and materials online and revalidate them without experiencing interruptions in our workflow. In the case of an alternative supplier for Illumina, we cannot assure you that replacement sequencers and associated reagents will be available or will meet our quality control and performance requirements for our laboratory operations. If we encounter delays or difficulties in securing, reconfiguring or revalidating the equipment and reagents we require for our tests, our business, financial condition, results of operations and reputation could be adversely affected.

Our planned STRATAFIDE and PCM products are currently being developed to use only Illumina's sequencing platform. Without access to these sequencers, we would be unable commercialize these products. In addition, any efforts to validate these distributed products on additional sequencing platforms would require significant resources, expenditures and time and attention of our management, and there is no guarantee that we would be successful in implementing any such sequencing platforms in a commercially sustainable way.

We depend on our information technology systems, and any failure of these systems could harm our business.

We depend on information technology and telecommunications systems for significant elements of our operations, including our laboratory information management system, our bioinformatics analytical software systems, our database of information relating to genetic variations and their role in disease process and drug metabolism, our clinical report optimization systems, our customer-facing web-based software, our customer reporting, and our various customer tools and platforms. We have installed, and expect to expand, a number of enterprise software systems that affect a broad range of business processes and functional areas, including for example, systems handling human resources, financial controls and reporting, customer relationship management, regulatory compliance and other infrastructure operations. In addition, we intend to extend the capabilities of both our preventative and detective security controls by augmenting the monitoring and alerting functions, the network design, and the automatic countermeasure operations of our technical systems. These information technology and telecommunications systems support a variety of functions, including laboratory operations, test validation, sample tracking, quality control, customer service support, billing and reimbursement, research and development activities, scientific and medical curation, and general administrative activities, including financial reporting.

Information technology and telecommunications systems are vulnerable to damage from a variety of sources, including telecommunications or network failures, malicious human acts and natural disasters. Moreover, despite network security and back-up measures, some of our servers are potentially vulnerable to physical or electronic break-ins, computer viruses and similar disruptive problems. Despite the precautionary measures we have taken to prevent unanticipated problems that could affect our information technology and telecommunications systems, failures or significant downtime of our information technology or telecommunications systems or those used by our third-party service providers could prevent us from conducting tests, preparing and providing reports to clinicians, billing payers, processing reimbursement appeals, handling physician or patient inquiries, conducting research and development activities, and managing the administrative and financial aspects of our business. Any disruption or loss of information technology or telecommunications systems on which critical aspects of our operations depend could have an adverse effect on our business and results of operations.

Technical problems have arisen, and may arise in the future, in connection with our data and systems, including those that are hosted by third-party providers, which have in the past and may in the future result in interruptions in our business and operations. These types of problems may be caused by a variety of factors, including infrastructure changes, human or software errors, viruses, security attacks, fraud, spikes in customer usage and denial of service issues. From time to time, large third-party web hosting providers have experienced outages or other problems that have resulted in their systems being offline and inaccessible. Such outages could materially impact our business and operations.

If our laboratories become inoperable due to disasters, health epidemics or for any other reasons, we will be unable to perform our tests and our business will be harmed.

We perform all of our tests at our production facilities in San Francisco and Irvine, California, in Golden, Colorado, in Iselin, New Jersey, and in Seattle, Washington. We plan to open a new laboratory and production facility in Morrisville, North Carolina. Our laboratories and the equipment we use to perform our tests would be costly to replace and could require substantial lead time to replace and qualify for use. Our laboratories may be harmed or rendered inoperable by natural or man-made disasters, including earthquakes, hurricanes, flooding, fire and power outages, or by health epidemics, such as the COVID-19 pandemic, which may render it difficult or impossible for us to perform our tests for some period of time. This risk of natural disaster is especially high for us since we perform the majority of our tests at our San Francisco laboratory, which is located in an active seismic region, and we do not have a redundant facility to perform the same tests in the event our San Francisco laboratory is inoperable. The inability to perform our tests or the backlog that could develop if our laboratories are inoperable for even a short period of time may result in the loss of customers or harm our reputation. Although we maintain insurance for damage to our property and the disruption of our business, this insurance may not cover all of our potential losses and may not continue to be available to us on acceptable terms, if at all. The inability to open the planned facility in North Carolina, delays in opening such facility or failure to obtain required permits, licenses, or certifications could result in increased costs and prevent us from realizing the intended benefits of the new facility.

The loss of any member or change in structure of our senior management team could adversely affect our business.

Our success depends in large part upon the skills, experience and performance of members of our executive management team and others in key leadership positions. The efforts of these persons will be critical to us as we continue to develop our technologies and test processes and focus on scaling our business. If we were to lose one or more key executives, we may experience difficulties in competing effectively, developing our technologies and implementing our business strategy. All of our executives and employees are at-will, which means that either we or the executive or employee may terminate their employment at any time. We do not carry key person insurance for any of our executives or employees. In addition, we do not have a long-term retention agreement in place with our president and chief executive officer.

Development of new tests is a complex process, and we may be unable to commercialize new tests on a timely basis, or at all.

We cannot assure you that we will be able to develop and commercialize new tests on a timely basis. Before we can commercialize any new tests, we will need to expend significant funds in order to:

•conduct research and development;

•further develop and scale our laboratory processes; and

•further develop and scale our infrastructure to be able to analyze increasingly larger and more diverse amounts of data.

Our testing service development process involves risk, and development efforts may fail for many reasons, including:

•failure of any test to perform as expected;

•lack of validation or reference data; or

•failure to demonstrate utility of a test.

As we develop tests, we will have to make significant investments in development, marketing and selling resources. In addition, competitors may develop and commercialize competing tests faster than we are able to do so.

Our research and development efforts to add additional indications to our IVD products, if approved, will be hindered if we are not able to contract with third parties for access to tissue samples.

Under standard clinical practice, tumor biopsies removed from patients are preserved and stored in formalin-fixed paraffin embedded, or FFPE, format, and liquid biopsies are taken with a blood draw and stored in blood collection tubes. In order to add additional indications to our IVD products, if approved, we will need to secure access to these FFPE tumor biopsy and liquid biopsy samples, as well as information pertaining to the clinical outcomes of the patients from which they were derived for IVD development activities. Others compete with us for access to these samples. Additionally, the process of negotiating access to samples is lengthy because it typically involves numerous parties and approval levels to resolve complex issues such as usage rights, institutional review board approval, privacy rights, publication rights, intellectual property ownership and research parameters. If we are unable to negotiate access to tissue samples on a timely basis or on commercially reasonable terms, or at all, or if other laboratories or competitors secure access to these samples before us, our ability to research, develop and commercialize future IVD products will be limited or delayed.

Ethical, legal and social concerns related to the use of genetic information could reduce demand for our tests.

Genetic testing has raised ethical, legal and social issues regarding privacy rights and the appropriate uses of the resulting information. Governmental authorities could, for social or other purposes, limit or regulate the use of genetic information or genetic testing or prohibit testing for genetic predisposition to certain conditions, particularly for those that have no known cure. Similarly, these concerns may lead patients to refuse to use, or clinicians to be reluctant to order, genomic tests even if permissible. These and other ethical, legal and social concerns may limit market acceptance of our tests or reduce the potential markets for our tests, either of which could have an adverse effect on our business, financial condition or results of operations.

We rely on third-party laboratories to perform portions of our biopharmaceutical testing services.

A portion of our biopharmaceutical testing services is performed by third-party laboratories. These third-party laboratories are subject to contractual obligations to perform these services for us, but are not otherwise under our control. We therefore do not control the capacity and quality control efforts of these third-party laboratories other than through our ability to enforce contractual obligations on volume and quality systems, and have no control over such laboratories' compliance with applicable legal and regulatory requirements. We also have no control over the timeliness of such laboratories' performance of their obligations to us, and the third-party laboratories that we have contracted with have in the past had, and occasionally continue to have, issues with delivering results to us or resolving issues with us within the time frames we expected or established in our contracts with them, which sometimes results in longer than expected turnaround times for, or negatively impacts the performance of, these tests and services. In the event of any adverse developments with these third-party laboratories or their ability to perform their obligations in a timely manner and in accordance with the standards that we and our customers expect, our ability to service customers may be delayed, interrupted or otherwise adversely affected, which could result in a loss of customers and harm to our reputation. Furthermore, when these issues arise, we have had to expend time, management's attention and other resources to address and remedy such issues.

We may not have sufficient alternative backup if one or more of the third-party laboratories that we contract with are unable to satisfy their obligations to us with sufficient performance, quality and timeliness. Any natural or other disaster, acts of war or terrorism, shipping embargoes, labor unrest or political instability or similar events at one or more of these third-party laboratories' facilities that causes a loss of capacity would heighten the risks that we face. Changes to or termination of agreements or inability to renew agreements with these third-party laboratories or enter into new agreements with other laboratories that are able to perform such portions of our service offerings could impair, delay or suspend our efforts to market and sell these services.

Our international business exposes us to business, regulatory, political, operational, financial and economic risks associated with doing business outside of the United States.

Doing business internationally involves a number of risks, including:

•multiple, conflicting and changing laws and regulations such as privacy regulations, tax laws, export and import restrictions, employment laws, regulatory requirements, and other governmental approvals, permits and licenses;

•failure by us or our distributors to obtain regulatory approvals for the use of our tests in various countries;

•complexities and difficulties in obtaining protection and enforcing our intellectual property;

•difficulties in staffing and managing foreign operations;

•complexities associated with managing multiple payer reimbursement regimes, government payers or patient self-pay systems;

•logistics and regulations associated with shipping samples, including infrastructure conditions, customs and transportation delays;

•limits on our ability to penetrate international markets if we do not to conduct our tests locally;

•natural disasters, including the recent and ongoing outbreak and spreading of COVID-19, political and economic instability, including wars, terrorism and political unrest, outbreak of disease, boycotts, curtailment of trade and other business restrictions; and

•regulatory and compliance risks that relate to maintaining accurate information and control over activities that may fall within the purview of the U.S. Foreign Corrupt Practices Act, or FCPA, its books and records provisions, or its anti-bribery provisions.

Any of these factors could significantly harm our international operations and, consequently, our revenue and results of operations.

In addition, applicable export or import laws and regulations such as prohibitions on the export of samples imposed by countries outside of the United States, or international privacy or data restrictions that are different or more stringent than those of the United States, may require that we build additional laboratories or engage in joint ventures or other business partnerships in order to offer our tests internationally in the future. Any such restrictions would impair our ability to offer our tests in such countries and could have an adverse effect on our business, financial condition and results of operations.

Our ability to use our net operating loss carryforwards and certain other tax attributes may be limited.

At September 30, 2021, our total gross deferred tax assets were $418.9 million. Due to our lack of earnings history and uncertainties surrounding our ability to generate future taxable income, our net deferred tax assets have been fully offset by a valuation allowance. The deferred tax assets are primarily comprised of federal and state tax net operating losses and tax credit carryforwards. Furthermore, under Section 382 of the Internal Revenue Code of 1986, as amended, or the Internal Revenue Code, if a corporation undergoes an "ownership change," the corporation's ability to use its pre-change net operating loss carryforwards, or NOLs, and other pre-change tax attributes (such as research tax credits) to offset its future taxable income may be limited. In general, an "ownership change" occurs if there is a cumulative change in our ownership by "5% shareholders" that exceeds 50 percentage points over a rolling three-year period. Some of our prior acquisitions have resulted in an ownership change, and we may experience ownership changes in the future. Our existing NOLs and tax credit carryovers may be subject to limitations arising from previous ownership changes, and if we undergo one or more ownership changes in connection with completed acquisitions, or other future transactions in our stock, our ability to utilize NOLs and tax credit carryovers could be further limited by Section 382 of the Internal Revenue Code. As a result, if we earn net taxable income, our ability to use our pre-change net operating loss and tax credit carryforwards to offset U.S. federal taxable income may be subject to limitations, which could potentially result in increased future tax liability to us. The annual limitation may result in the expiration of certain net operating loss and tax credit carryforwards before their utilization. In addition, the Tax Cuts and Jobs Act limits the deduction for NOLs to 80% of current year taxable income and eliminates NOL carrybacks. Also, at the state level, there may be periods during which the use of NOLs is suspended or otherwise limited, which could accelerate or permanently increase state taxes owed.

Risks related to government regulation

If the FDA regulates the tests we currently offer as LDTs as medical devices, we could incur substantial costs and our business, financial condition and results of operations could be adversely affected.

We provide many of our tests as laboratory-developed tests, or LDTs. CMS and certain state agencies regulate the performance of LDTs (as authorized by CLIA, and state law, respectively).

Historically, the FDA has exercised enforcement discretion with respect to most LDTs and has not required laboratories that furnish LDTs to comply with the agency's requirements for medical devices (e.g., establishment registration, device listing, quality systems regulations, premarket clearance or premarket approval, and post-market controls). However, the FDA has stated it intends to end its policy of general enforcement discretion and regulate certain LDTs as medical devices. To this end, on October 3, 2014, the FDA issued two draft guidance documents, entitled "Framework for Regulatory Oversight of Laboratory Developed Tests (LDTs)" and "FDA Notification and Medical Device Reporting for Laboratory Developed Tests (LDTs)," respectively, that set forth a proposed risk-based regulatory framework that would apply varying levels of FDA oversight to LDTs. Subsequently, on January 13, 2017, the FDA published a "discussion paper" in which it outlined a substantially revised "possible approach" to the oversight of LDTs.

In March 2020, a bill titled the "Verifying Accurate Leading-edge IVCT Development Act of 2020," or VALID Act, was officially introduced in Congress. The bill proposes a risk-based approach to regulate LDTs and creates a new in vitro clinical test, or IVCT, category of regulated products, which includes LDTs, and a regulatory structure under the FDA. As proposed, the bill grandfathers many existing tests from the proposed premarket approval, quality systems, and labeling requirements, respectively, but would require such tests to comply with other regulatory requirements (e.g., registration and listing, adverse event reporting). Later that month, Senator Paul introduced the Verified Innovative Testing in American Laboratories Act of 2020, or VITAL Act, which proposes that all aspects of "laboratory-developed testing procedures" be subject to regulation under CLIA, and that no aspects of such procedures be subject to regulation by the FDA. The VALID Act was re-introduced in a slightly modified form in June 2021, however, we cannot predict if either of these bills will be enacted in their current (or any other) form and cannot quantify the effect of these bills on our business.

In August 2020, the U.S. Department of Health and Human Services, the parent agency for FDA, announced that the FDA "will not require premarket review of LDTs absent notice-and-comment rulemaking, as opposed to through guidance documents, compliance manuals, website statements, or other informal issuances." It is unclear at this time whether this policy will be retained by the Biden Administration, and if so, when the FDA might seek to begin the notice and comment rulemaking process.

Legislative proposals addressing the FDA's oversight of LDTs have been introduced in previous Congresses, and we expect that new legislative proposals may be introduced from time-to-time. The likelihood that Congress will pass such legislation and the extent to which such legislation may affect the FDA's plans to regulate certain LDTs as medical devices is difficult to predict at this time.

In April 2020, we completed our acquisition of Genelex Solutions, LLC, which offers certain pharmacogenetic, or PGx, tests as LDTs. Recently the FDA has taken a more active role in the oversight of PGx tests offered as LDTs. In 2019, the FDA contacted several clinical laboratories, including Genelex, to demand changes to PGx test reports and marketing materials. In February 2020, the FDA issued a statement indicating that it continues to have concerns about the claims that certain clinical laboratories make with respect to their PGx tests, and published tables that list PGx associations for which FDA has determined that the data support therapeutic management recommendations, a potential impact on safety or response, or a potential impact on pharmacokinetic properties only, respectively. To date, however, the FDA has not provided any general guidance on the type(s) of claims or other characteristics that will cause a PGx test to fall outside FDA's enforcement discretion. As such, the extent to which the FDA will allow any laboratory, including Genelex or Invitae, to offer PGx tests in their current form without meeting FDA regulatory requirements for medical devices is unclear at this time.

If the FDA ultimately regulates certain LDTs (either as medical devices or as part of a new stand-alone regulatory category for IVCTs), whether via individualized enforcement action, or more generally, as outlined in final guidance or final regulation, or as instructed by Congress, our tests may be subject to certain additional regulatory requirements. Complying with the FDA's requirements can be expensive, time-consuming and subject us to significant or unanticipated delays. Insofar as we may be required to obtain premarket clearance or approval to perform or continue performing an LDT, we cannot assure you that we will be able to obtain such authorization. Even if we obtain regulatory clearance or approval where required, such authorization may not be for the intended uses that we believe are commercially attractive or are critical to the commercial success of our tests. As a result, the application of the FDA's requirements to our tests could materially and adversely affect our business, financial condition and results of operations.

Failure to comply with applicable FDA regulatory requirements may trigger a range of enforcement actions by the FDA including warning letters, civil monetary penalties, injunctions, criminal prosecution, recall or seizure, operating restrictions, partial suspension or total shutdown of operations, and denial of or challenges to applications for clearance or approval, as well as significant adverse publicity.

In addition, in November 2013, the FDA issued final guidance regarding the distribution of products labeled for research use only. Certain of the reagents and other products we use in our tests are labeled as research use only products. Certain of our suppliers may cease selling research use only products to us and any failure to obtain an acceptable substitute could significantly and adversely affect our business, financial condition and results of operations.

If we are unable to transition to the new European Union IVDR regulations, we could lose the ability to serve the European market.

The European Union transitions to a new regulation for in vitro diagnostic devices in May 2022, the In Vitro Diagnostic Regulation, or IVDR, which changes the regulatory status of a substantial number of IVDs. The percentage of devices requiring approval from a notified body is estimated to be shifting from 15% of devices under the current directive to between 70% and 90% of devices under the new regulation. Notified bodies must themselves be certified to the new regulation, and few have as of 2021. Consequently, notified bodies may have little or no capacity for new clients. LDTs may newly be considered IVDs and subject to the IVDR, requiring approval from a notified body to be marketed. If we are unable to secure a notified body or complete registration in time for implementation of the new regulation, our existing tests cannot be marketed in Europe.

If we fail to comply with federal, state and foreign laboratory licensing requirements, we could lose the ability to perform our tests or experience disruptions to our business.

We are subject to CLIA, a federal law that regulates clinical laboratories that perform testing on specimens derived from humans for the purpose of providing information for the diagnosis, prevention or treatment of disease. CLIA regulations establish specific standards with respect to personnel qualifications, facility administration, proficiency testing, quality control, quality assurance and inspections. CLIA certification is also required in order for us to be eligible to bill state and federal healthcare programs, as well as many private third-party payers, for our tests. We have current CLIA certifications to conduct our tests at our laboratories in San Francisco and Irvine, California; Golden, Colorado; Iselin, New Jersey; and Seattle, Washington. To renew these certifications, we are subject to survey and inspection every two years. Moreover, CLIA inspectors may make random inspections of our clinical reference laboratories.

We are also required to maintain in-state licenses to conduct testing in California, New Jersey and Washington. California, New Jersey and Washington laws establish standards for day-to-day operation of our clinical reference laboratories in San Francisco and Irvine, in Iselin, and in Seattle, respectively, which include the training and skills required of personnel and quality control. (Our Colorado laboratory is not required to maintain a state clinical laboratory license.)

Several states require the licensure of out-of-state laboratories that accept specimens from those states. All our laboratories hold the required state laboratory licenses for California, Maryland, Pennsylvania, and Rhode Island, and all our laboratories, with the exception of Golden, Colorado, hold a New York State permit.

In addition to having laboratory licenses in New York, our clinical reference laboratories are approved on test-specific bases for the tests they run as LDTs by the New York State Department of Health, or NYDOH, for tests offered to patients in New York. Other states may adopt similar licensure requirements in the future, which may require us to modify, delay or stop our operations in such jurisdictions. We may also be subject to regulation in foreign jurisdictions as we seek to expand international utilization of our tests or such jurisdictions adopt new licensure requirements, which may require review of our tests in order to offer them or may have other limitations such as restrictions on the transport of samples necessary for us to perform our tests that may limit our ability to make our tests available outside of the United States. Complying with licensure requirements in new jurisdictions may be expensive, time-consuming, and subject us to significant and unanticipated delays.

In order to eventually market certain of our current or future products and services in any particular foreign jurisdiction, we must establish and comply with numerous and varying regulatory requirements on a jurisdiction-by-jurisdiction basis regarding quality, safety, performance and efficacy. In addition, clinical trials or clinical investigations conducted in one country may not be accepted by regulatory authorities in other countries, and regulatory clearance, authorization or approval in one country does not guarantee regulatory clearance, authorization or approval in any other country. For example, the performance characteristics of certain of our products and services may need to be validated separately in specific ethnic and genetic populations. Approval processes vary among countries and can involve additional product testing and validation and additional administrative review periods.

Seeking foreign regulatory clearance, authorization or approval could result in difficulties and costs for us and our collaborators and require additional preclinical studies, clinical trials or clinical investigations which could be costly and time-consuming. Regulatory requirements and ethical approval obligations can vary widely from country to country and could delay or prevent the introduction of certain of our products and services in those countries. The foreign regulatory clearance, authorization or approval process involves all of the risks and uncertainties associated with FDA clearance, authorization or approval. If we or our collaborators fail to comply with regulatory requirements in international markets or to obtain and maintain required regulatory clearances, authorizations or approvals in international markets, or if those approvals are delayed, our target market will be reduced and our ability to realize the full market potential of our products and services will be unrealized.

Failure to comply with applicable clinical laboratory licensure requirements may result in a range of enforcement actions, including license suspension, limitation, or revocation, directed plan of action, onsite monitoring, civil monetary penalties, criminal sanctions, cancellation of the laboratory’s approval to receive Medicare and Medicaid payment for its services, exclusion from some healthcare systems' programs, as well as significant adverse publicity. Any sanction imposed under CLIA, its implementing regulations, or state or foreign laws or regulations governing clinical laboratory licensure, or our failure to renew our CLIA certifications, a state or foreign license, or accreditation, could have a material adverse effect on our business, financial condition and results of operations. Even if we were able to bring our laboratory back into compliance, we could incur significant expenses and potentially lose revenue in doing so.

The College of American Pathologists, or CAP, maintains a clinical laboratory accreditation program. CAP asserts that its program is "designed to go well beyond regulatory compliance" and helps laboratories achieve the highest standards of excellence to positively impact patient care. While not required to operate a CLIA-certified laboratory, many private insurers require CAP accreditation as a condition to contracting with clinical laboratories to cover their tests. In addition, some countries outside the United States require CAP accreditation as a condition to permitting clinical laboratories to test samples taken from their citizens. We have CAP accreditations for our laboratories. Failure to maintain CAP accreditation could have a material adverse effect on the sales of our tests and the results of our operations.

We may not be able to obtain regulatory clearance or approval of our IVD products, or even if approved, such products may not be approved for guideline inclusion, which could adversely our ability to realize the intended benefits of our acquisition of ArcherDX.

A significant portion of our therapy selection and personalized cancer monitoring commercial strategy, including for STRATAFIDE and PCM, relies on receiving regulatory approvals with guideline inclusion to strengthen our position in establishing coverage and reimbursement of our IVD products with both public and private payers. If we do not receive such regulatory approvals in a timely manner or at all, or we are not successful in obtaining such guideline inclusion, we may not be able to commercialize our IVD products. Additionally, third-party payers may be unwilling to provide sufficient coverage and reimbursement for these products necessary for hospitals and other healthcare providers to adopt our solutions as part of their oncological treatment strategy. We have also focused our efforts on the development of PCM for FDA clearance and approval as a prognostic device for predicting recurrence of a primary cancer after initial treatment, which can include surgery alone or surgery plus adjuvant therapy.

Moreover, development of the data necessary to obtain regulatory clearance and/or approval of an IVD, such as STRATAFIDE, is time-consuming and carries with it the risk of not yielding the desired results. The performance achieved in published studies may not be repeated in later studies that may be required to obtain FDA clearance and/or approval or regulatory approvals in foreign jurisdictions. Limited results from earlier-stage verification studies may not predict results from studies in larger numbers of subjects drawn from more diverse populations over longer periods of time. Unfavorable results from ongoing preclinical and clinical studies could result in delays, modifications or abandonment of ongoing analytical or future clinical studies, or abandonment of a product development program, or may delay, limit or prevent regulatory approvals or clearances or commercialization of our product candidates, any of which may materially impact our ability to realize the expected benefits of our acquisition of ArcherDX.

Complying with numerous statutes and regulations pertaining to our business is an expensive and time-consuming process, and any failure to comply could result in substantial penalties.

Our operations are subject to other extensive federal, state, local and foreign laws and regulations, all of which are subject to change. These laws and regulations currently include, among others:

•HIPAA, which establishes comprehensive federal standards with respect to the privacy and security of protected health information and requirements for the use of certain standardized electronic transactions;

•amendments to HIPAA under HITECH, which strengthen and expand HIPAA privacy and security compliance requirements, increase penalties for violators and expand vicarious liability, extend enforcement authority to state attorneys general, and impose requirements for breach notification;

•the GDPR, which imposes strict privacy and security requirements on controllers and processors of personal data, including enhanced protections for "special categories" of personal data, including sensitive information such as health and genetic information of data subjects;

•the CCPA, which, among other things, regulates how subject businesses may collect, use, and disclose the personal information of consumers who reside in California, affords rights to consumers that they may exercise against businesses that collect their information, and requires implementation of reasonable security measures to safeguard personal information of California consumers;

•the federal Anti-Kickback Statute, which prohibits knowingly and willfully offering, paying, soliciting or receiving remuneration, directly or indirectly, overtly or covertly, in cash or in kind, to induce or in return for the referral of an individual, for the furnishing of or arrangement for the furnishing of any item or service for which payment may be made in whole or in part by a federal healthcare program, or the purchasing, leasing, ordering, arranging for, or recommend purchasing, leasing or ordering, any good, facility, item or service for which payment may be made, in whole or in part, under a federal healthcare program;

•The Eliminating Kickbacks in Recovery Act of 2018, or EKRA, which prohibits payments for referrals to recovery homes, clinical treatment facilities, and laboratories and reaches beyond federal health care programs, to include private insurance;

•the federal physician self-referral law, known as the Stark Law, which prohibits a physician from making a referral to an entity for certain designated health services covered by the Medicare program, including laboratory and pathology services, if the physician or an immediate family member has a financial relationship with the entity unless an exception applies, and prohibits an entity from billing for designated health services furnished pursuant to a prohibited referral;

•the federal false claims law, which imposes liability on any person or entity that, among other things, knowingly presents, or causes to be presented, a false or fraudulent claim for payment to the federal government;

•the federal Civil Monetary Penalties Law, which prohibits, among other things, the offering or transfer of remuneration to a Medicare or state healthcare program beneficiary if the person knows or should know it is likely to influence the beneficiary's selection of a particular provider, practitioner or supplier of services reimbursable by Medicare or a state healthcare program, unless an exception applies;

•the HIPAA fraud and abuse provisions, which create new federal criminal statutes that prohibit, among other things, defrauding health care benefit programs, willfully obstructing a criminal investigation of a healthcare offense and falsifying or concealing a material fact or making any materially false statements in connection with the payment for healthcare benefits, items or services;

•other federal and state fraud and abuse laws, such as anti-kickback laws, prohibitions on self-referral, fee-splitting restrictions, insurance fraud laws, anti-markup laws, prohibitions on the provision of tests at no or discounted cost to induce physician or patient adoption, and false claims acts, which may extend to services reimbursable by any third-party payer, including private insurers;

•the 21st Century Cures Act information blocking prohibition, which prohibits covered actors from engaging in certain practices that are likely to interfere with the access, exchange, or use of electronic health information;

•the Physician Payments Sunshine Act and similar state laws that require reporting of certain payments and other transfers of value made by applicable manufacturers, directly or indirectly, to or on behalf of covered recipients including physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors) and teaching hospitals as well as ownership and investment interests held by physicians and their immediate family members. Beginning in 2022, applicable manufacturers also will be required to report such information regarding its relationships with physician assistants, nurse practitioners, clinical nurse specialists, certified registered nurse anesthetists and certified nurse midwives during the previous year;

•state laws that limit or prohibit the provision of certain payments and other transfers of value to certain covered healthcare providers;

•the prohibition on reassignment of Medicare claims, which, subject to certain exceptions, precludes the reassignment of Medicare claims to any other party;

•state laws that prohibit other specified practices, such as billing clinicians for testing that they order; waiving coinsurance, copayments, deductibles and other amounts owed by patients; billing a state Medicaid program at a price that is higher than what is charged to one or more other payers; and

•similar foreign laws and regulations that apply to us in the countries in which we operate or may operate in the future.

We have adopted policies and procedures designed to comply with these laws and regulations. In the ordinary course of our business, we conduct internal reviews of our compliance with these laws. Our compliance may also be subject to governmental review. The growth of our business and our expansion outside of the United States may increase the potential of violating these laws or our internal policies and procedures. The risk of our being found in violation of these or other laws and regulations is further increased by the fact that many have not been fully interpreted by the regulatory authorities or the courts, and their provisions are open to a variety of interpretations. We recently received a subpoena from the U.S. Attorney's Office for the District of Massachusetts requesting that we produce certain documents regarding our sponsored testing programs. We are in the process of responding to the subpoena and are cooperating fully with the investigation. Although we remain committed to compliance with all applicable laws and regulations, we cannot predict the outcome of this investigation or any other requests or investigations that may arise in the future regarding these or other subject matters. Any action brought against us for violation of the above-referenced or other laws or regulations, even if we successfully defend against it, could cause us to incur significant legal expenses and divert our management's attention from the operation of our business. If our operations are found to be in violation of any of these laws and regulations, we may be subject to any applicable penalty associated with the violation, including significant administrative, civil and criminal penalties, damages, fines, imprisonment, exclusion from participation in Federal healthcare programs, refunding of payments received by us, and curtailment or cessation of our operations. Any of the foregoing consequences could seriously harm our business and our financial results.

Healthcare policy changes, including legislation reforming the U.S. healthcare system, may have a material adverse effect on our financial condition, results of operations and cash flows.

In March 2010, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, collectively referred to as the Affordable Care Act, was enacted in the United States, which made a number of substantial changes in the way healthcare is financed by both governmental and private insurers. Policy changes or implementation of new health care legislation could result in significant changes to health care systems. In the United States, this could include potential modification or repeal of all or parts of the Affordable Care Act.

In April 2014, Congress passed the Protecting Access to Medicare Act of 2014, or PAMA, which included substantial changes to the way in which clinical laboratory services are paid under Medicare. Under PAMA (as amended by the Further Consolidated Appropriations Act, 2020 and the Coronavirus Aid, Relief, and Economic Security Act, respectively) and its implementing regulations, clinical laboratories must report to CMS private payer rates beginning in 2017, and then in 2022 and every three years thereafter for clinical diagnostic laboratory tests that are not advanced diagnostic laboratory tests and every year for advanced diagnostic laboratory tests.

We do not believe that our tests meet the definition of advanced diagnostic laboratory tests, but in the event that we seek designation for one or more of our tests as an advanced diagnostic laboratory test and the tests are determined by CMS to meet these criteria or new criteria developed by CMS, we would be required to report private payer data for those tests annually. Otherwise, we will be required to report private payer rates for our tests on an every three years basis starting in 2022. Laboratories that fail to timely report the required payment information may be subject to substantial civil money penalties.

As set forth in the PAMA final rule, for tests furnished on or after January 1, 2018, Medicare payments for clinical diagnostic laboratory tests are paid based upon these reported private payer rates. For clinical diagnostic laboratory tests that are assigned a new or substantially revised code, initial payment rates for clinical diagnostic laboratory tests that are not advanced diagnostic laboratory tests will be assigned by the cross-walk or gap-fill methodology. Initial payment rates for new advanced diagnostic laboratory tests will be based on the actual list charge for the laboratory test. The payment rates calculated under PAMA went into effect starting January 1, 2018. Where applicable, reductions to payment rates resulting from the new methodology are limited to 10% per test per year in each of the years 2018 through 2020. Rates will be held at 2020 levels during 2021, and then, where applicable based upon median private payer rates reported in 2017 or 2022, reduced by up to 15% per test per year in each of 2022 through 2024 (with a second round of private payer rate reporting in 2022 to establish rates for 2023 through 2025).

PAMA also authorized the adoption of new, temporary billing codes and/or unique test identifiers for FDA-cleared or approved tests as well as advanced diagnostic laboratory tests. The CPT® Editorial Panel approved a proposal to create a new section of billing codes to facilitate implementation of this section of PAMA, but these codes would apply to our tests only if we apply for such codes.

In March 2018, CMS published a national coverage determination, or NCD, for next generation sequencing, or NGS tests for somatic (acquired) cancer testing. CMS subsequently updated this NCD in January 2020 to address coverage for NGS tests for germline (inherited) cancer testing and to clarify certain aspects of Medicare's coverage of NGS for somatic cancer testing. For somatic cancer testing, the updated NCD establishes full coverage for FDA-approved or FDA-cleared NGS-based companion diagnostic assays that report results using report templates that specify treatment options when offered for their FDA-approved or FDA-cleared use(s), ordered by the patient's treating physician for Medicare beneficiaries with advanced cancer (recurrent, relapsed, refractory, metastatic, or advanced stage III or IV cancer) who have not have previously been tested with the same test using NGS for the same cancer genetic content, and have decided to seek further cancer treatment (e.g., therapeutic chemotherapy). The NCD also gives MACs the authority to establish local coverage for NGS-based somatic cancer assays that are not FDA-approved or FDA-cleared companion diagnostics when offered to patients meeting the above-referenced criteria. It appears that NGS-based somatic cancer tests provided for patients with cancer that do not meet the above-referenced criteria, e.g., patients with earlier stage cancers, are currently nationally non-covered under the NCD.

Effective January 27, 2020, the NCD also established full coverage for FDA-approved or FDA-cleared NGS-based germline tests that report results using report templates that specify treatment options when ordered by the patient's treating physician for patients with ovarian or breast cancer, a clinical indication for germline testing for hereditary breast or ovarian cancer, and a risk factor for germline breast or ovarian cancer, provided the patient has not previously been tested with the same germline test using NGS for the same germline genetic content. The NCD also gives MACs the authority to establish local coverage for NGS-based germline tests for ovarian or breast cancer that are not FDA-approved or FDA-cleared, as well as for NGS-based tests for any other cancer diagnosis (regardless of the test's FDA regulatory status) when offered to patients meeting the above-referenced criteria for germline testing. Since we already have local coverage for our germline tests for ovarian and breast cancer, we believe that the NCD will not have a material impact on which of our tests will be reimbursable by CMS for Medicare patients.

We cannot predict whether future healthcare initiatives will be implemented at the federal or state level, or how any future legislation or regulation may affect us. For instance, the payment reductions imposed by the Affordable Care Act and the expansion of the federal and state governments' role in the U.S. healthcare industry as well as changes to the reimbursement amounts paid by payers for our tests and future tests or our medical procedure volumes may reduce our profits and have a materially adverse effect on our business, financial condition, results of operations and cash flows. Notably, Congress enacted legislation in 2017 that eliminated the Affordable Care Act's "individual mandate" beginning in 2019, which may significantly impact the number of covered lives participating in exchange plans. Congress has proposed on several occasions to impose a 20% coinsurance on patients for clinical laboratory tests reimbursed under the clinical laboratory fee schedule, which would increase our billing and collecting costs and decrease our revenue. Further, it is possible that additional governmental action be taken in response to the COVID-19 pandemic.

If we use hazardous materials in a manner that causes injury, we could be liable for resulting damages.

Our activities currently require the use of hazardous chemicals and biological material. We cannot eliminate the risk of accidental contamination or injury to employees or third parties from the use, storage, handling or disposal of these materials. In the event of contamination or injury, we could be held liable for any resulting damages, and any liability could exceed our resources or any applicable insurance coverage we may have. In 2018, we decommissioned our laboratory in Massachusetts; however, we could be held liable for any damages resulting from our prior use of hazardous chemicals and biological materials at this facility. Additionally, we are subject on an ongoing basis to federal, state and local laws and regulations governing the use, storage, handling and disposal of these materials and specified waste products. The cost of compliance with these laws and regulations may become significant, and our failure to comply may result in substantial fines or other consequences, and either could negatively affect our operating results.

We could be adversely affected by violations of the FCPA and other worldwide anti-bribery laws.

We are subject to the FCPA, which prohibits companies and their intermediaries from making payments in violation of law to non-U.S. government officials for the purpose of obtaining or retaining business or securing any other improper advantage. We are increasing our direct sales and operations personnel outside the United States, in which we have limited experience. We use a limited number of independent distributors to sell our tests internationally, which requires a high degree of vigilance in maintaining our policy against participation in corrupt activity, because these distributors could be deemed to be our agents, and we could be held responsible for their actions. Other U.S. companies in the medical device and pharmaceutical fields have faced criminal penalties under the FCPA for allowing their agents to deviate from appropriate practices in doing business with these individuals. We are also subject to similar anti-bribery laws in the jurisdictions in which we operate, including the United Kingdom's Bribery Act of 2010, which also prohibits commercial bribery and makes it a crime for companies to fail to prevent bribery. These laws are complex and far-reaching in nature, and, as a result, we cannot assure you that we would not be required in the future to alter one or more of our practices to be in compliance with these laws or any changes in these laws or the interpretation thereof. Any violations of these laws, or allegations of such violations, could disrupt our operations, involve significant management distraction, involve significant costs and expenses, including legal fees, and could result in a material adverse effect on our business, prospects, financial condition or results of operations. We could also incur severe penalties, including criminal and civil penalties, disgorgement and other remedial measures.

Risks related to our intellectual property

One of ArcherDX's competitors has alleged that its Anchored Multiplex PCR, or AMP, chemistry and products using AMP are infringing on its intellectual property, and ArcherDX may be required to redesign the technology, obtain a license, cease using the AMP chemistry altogether and/or pay significant damages, among other consequences, any of which would have a material adverse effect on ArcherDX's business as well as our financial condition and results of operations, and the intended benefits of our acquisition of ArcherDX.

ArcherDX's AMP chemistry underlies all of its RUO products and is also the foundation of STRATAFIDE and Personalized Cancer Monitoring, or PCM. On January 27, 2020, one of ArcherDX's competitors, Natera, Inc., or Natera, filed a complaint against ArcherDX in the United States District Court for the District of Delaware, alleging that ArcherDX's products using AMP chemistry, and the manufacture, use, sale, and offer for sale of such products, infringe U.S. Patent No. 10,538,814. On April 15, 2020, Natera amended its complaint to allege that ArcherDX's products using AMP chemistry and the manufacture, use, sale, and offer for sale of such products, infringe U.S. Patent No. 10,538,814, U.S. Patent No. 10,557,172, U.S. Patent No. 10,590,482, and U.S. Patent No. 10,597,708, each of which are held by Natera. On August 6, 2020, Natera filed another complaint against ArcherDX in the United States District Court for the District of Delaware alleging that ArcherDX's products using AMP chemistry, and the manufacture, use, sale, and offer for sale of such products, infringe U.S. Patent No. 10,731,220 (together with U.S. Patent Nos. 10,538,814, 10,557,172, 10,590,482, and 10,597,708, the "Natera Asserted Patents.") Natera seeks, among other things, damages and other monetary relief, costs and attorneys' fees, and an order enjoining ArcherDX from further infringement of The Natera Asserted Patents. On October 13, 2020, the court issued an order denying ArcherDX's motion for dismissal of Natera's infringement claims against STRATAFIDE, PCM, and ArcherMET, and declined to enter judgment that U.S. Patent No. 10,538,814, U.S. Patent No. 10,557,172, and U.S. Patent No. 10,590,482 are invalid. On January 12, 2021, the court issued an order granting Natera leave to amend its complaint to add Invitae as a co-defendant and plead allegations that ArcherDX and Invitae induce end-users to infringe the patents-in-suit. Natera filed its Second Amended Complaint on the same day and served Invitae on January 15, 2021. The litigations have now been consolidated for all purposes. A claim construction briefing order was issued on June 28, 2021. On October 27, 2021, Natera filed its Third Amended Complaint to add a Certificate of Correction to U.S. Patent No. 10,590,482. On November 3, 2021, ArcherDX filed its Answer and Counterclaims to Natera's Third Amended Complaint, adding an inequitable conduct defense and declaratory judgment counterclaims. Discovery is ongoing, and trial has been scheduled for May 2022.

In addition, on October 6, 2020, Natera filed a complaint against Genosity, which we acquired in April 2021, in the United States District Court for the District of Delaware, alleging that Genosity's use of its AsTra products, and the manufacture, use, sale, and offer for sale of such products, infringes U.S. Patent No. 10,731,220. Natera's complaint further alleges that Genosity's accused products use ArcherDX's ctDNA and region-specific primers. Genosity filed an answer to the complaint on February 15, 2021, denying Natera's allegations and setting forth affirmative defenses and counterclaims of non-infringement, invalidity and unenforceability due to inequitable conduct. On March 8, 2021, Natera filed a motion to dismiss and strike certain affirmative defenses and counterclaims brought by Genosity relating to inequitable conduct. The court has not yet issued a decision. No case schedule has been set.

If any of ArcherDX's products or ArcherDX's use of AMP chemistry is found to infringe any of the Natera Asserted Patents, it could be required to redesign its technology or obtain a license from Natera to continue developing, manufacturing, marketing, selling and commercializing AMP and its products. However, ArcherDX may not be successful in the redesign of its technology or able to obtain any such license on commercially reasonable terms or at all. Even if ArcherDX were able to obtain a license, it could be non-exclusive, thereby giving Natera and other third parties the right to use the same technologies licensed to ArcherDX, and it could require ArcherDX to make substantial licensing, royalty and other payments. ArcherDX also could be forced, including by court order, to permanently cease developing, manufacturing, marketing and commercializing ArcherDX's products that are found to be infringing. In addition, ArcherDX could be found liable for significant monetary damages, including treble damages and attorneys' fees, if ArcherDX is found to have willfully infringed any of the Natera Asserted Patents. Even if ArcherDX were ultimately to prevail, litigation with Natera could require us to divert substantial financial and management resources that we would otherwise be able to devote to our business.

We cannot reasonably estimate the final outcome, including any potential liability or any range of potential future charges associated with these litigations. However, any finding of infringement by ArcherDX of any of the Natera Asserted Patents could have a material adverse effect on the business of ArcherDX and the benefits we expected to achieve through our acquisition of ArcherDX, as well as our financial condition and results of operations.

Litigation or other proceedings or third-party claims of intellectual property infringement or misappropriation will require us to spend significant time and money, and could in the future prevent us from selling our tests or impact our stock price.

Our commercial success will depend in part on our avoiding infringement of patents and proprietary rights of third parties, including for example the intellectual property rights of competitors. As we continue to commercialize our tests in their current or an updated form, launch different and expanded tests, and enter new markets, competitors might claim that our tests infringe or misappropriate their intellectual property rights as part of business strategies designed to impede our successful commercialization and entry into new markets. Our activities may be subject to claims that we infringe or otherwise violate patents or other intellectual property rights owned or controlled by third parties. For example, as discussed in the preceding risk factor, we are currently engaged in litigation with a competitor of ArcherDX alleging infringement. We cannot assure you that our operations do not, or will not in the future, infringe existing or future patents. We may be unaware of patents that a third party, including for example a competitor in the genetic testing market, might assert are infringed by our business. There may also be patent applications that, if issued as patents, could be asserted against us. Third parties making claims against us for infringement or misappropriation of their intellectual property rights may seek and obtain injunctive or other equitable relief, which could effectively block our ability to perform our tests. Further, if a patent infringement suit were brought against us, we could be forced to stop or delay our development or sales of any tests or other activities that are the subject of such suit. Defense of these claims, regardless of merit, could cause us to incur substantial expenses and be a substantial diversion of our employee resources. Any adverse ruling or perception of an adverse ruling in defending ourselves could have a material adverse impact on our business and stock price. In the event of a successful claim of infringement against us by a third party, we may have to (1) pay substantial damages, possibly including treble damages and attorneys' fees if we are found to have willfully infringed patents; (2) obtain one or more licenses, which may not be available on commercially reasonable terms (if at all); (3) pay royalties; and/or (4) redesign any infringing tests or other activities, which may be impossible or require substantial time and monetary expenditure, all of which could have a material adverse impact on our cash position and business and financial condition.

If licenses to third-party intellectual property rights are or become required for us to engage in our business, we may be unable to obtain them at a reasonable cost, if at all. Even if such licenses are available, we could incur substantial costs related to royalty payments for licenses obtained from third parties, which could negatively affect our gross margins. Moreover, we could encounter delays in the introduction of tests while we attempt to develop alternatives. Defense of any lawsuit or failure to obtain any of these licenses on favorable terms could prevent us from commercializing tests, which could materially affect our ability to grow and thus adversely affect our business and financial condition.

Developments in patent law could have a negative impact on our business.

Although we view current U.S. Supreme Court precedent to be aligned with our belief that naturally occurring DNA sequences and detection of natural correlations between observed facts (such as patient genetic data) and an understanding of that fact's implications (such as a patient's risk of disease associated with certain genetic variations) should not be patentable, it is possible that subsequent determinations by the U.S. Supreme Court or other federal courts could limit, alter or potentially overrule current law. Moreover, from time to time the U.S. Supreme Court, other federal courts, the U.S. Congress or the U.S. Patent and Trademark Office, or USPTO, may change the standards of patentability, and any such changes could run contrary to, or otherwise be inconsistent with, our belief that naturally occurring DNA sequences and detection of natural correlations between observed facts and an understanding of that fact's implications should not be patentable, which could result in third parties newly claiming that our business practices infringe patents drawn from categories of patents which we currently view to be invalid as directed to unpatentable subject matter. For example, the U.S. Senate Judiciary Committee, Subcommittee on Intellectual Property held hearings in 2019 regarding a legislative proposal that would overrule current U.S. Supreme Court precedent concerning the scope of patentable subject matter. Our President and Chief Executive Officer, Sean George, appeared before this subcommittee. If such proposal were to be formulated as a bill and enacted into law, there could be an increase in third-party claims to patent rights over correlations between patient genetic data and its interpretation and such third parties may assert that our business practices infringe some of those resulting patent rights.

Our inability to effectively protect our proprietary technologies, including the confidentiality of our trade secrets, could harm our competitive position.

We currently rely upon trade secret protection and copyright, as well as non-disclosure agreements and invention assignment agreements with our employees, consultants and third parties, and to a limited extent patent protection, to protect our confidential and proprietary information. Although our competitors have utilized and are expected to continue utilizing similar methods and have aggregated and are expected to continue to aggregate similar databases of genetic testing information, our success will depend upon our ability to develop proprietary methods and databases and to defend any advantages afforded to us by such methods and databases relative to our competitors. If we do not protect our intellectual property adequately, competitors may be able to use our methods and databases and thereby erode any competitive advantages we may have.

We will be able to protect our proprietary rights from unauthorized use by third parties only to the extent that our proprietary technologies are covered by valid and enforceable patents or are effectively maintained as trade secrets. In this regard, we have applied, and we intend to continue applying, for patents covering such aspects of our technologies as we deem appropriate. However, we expect that potential patent coverage we may obtain will not be sufficient to prevent substantial competition. In this regard, we believe it is probable that others will independently develop similar or alternative technologies or design around those technologies for which we may obtain patent protection. In addition, any patent applications we file may be challenged and may not result in issued patents or may be invalidated or narrowed in scope after they are issued. Questions as to inventorship or ownership may also arise. Any finding that our patents or applications are unenforceable could harm our ability to prevent others from practicing the related technology, and a finding that others have inventorship or ownership rights to our patents and applications could require us to obtain certain rights to practice related technologies, which may not be available on favorable terms, if at all. If we initiate lawsuits to protect or enforce our patents, or litigate against third-party claims, which would be expensive, and, if we lose, we may lose some of our intellectual property rights. Furthermore, these lawsuits may divert the attention of our management and technical personnel.

We expect to rely primarily upon trade secrets and proprietary know-how protection for our confidential and proprietary information, and we have taken security measures to protect this information. These measures, however, may not provide adequate protection for our trade secrets, know-how or other confidential information. Among other things, we seek to protect our trade secrets and confidential information by entering into confidentiality agreements with employees and consultants. There can be no assurance that any confidentiality agreements that we have with our employees and consultants will provide meaningful protection for our trade secrets and confidential information or will provide adequate remedies in the event of unauthorized use or disclosure of such information. Accordingly, there also can be no assurance that our trade secrets will not otherwise become known or be independently developed by competitors. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret can be difficult, expensive and time-consuming, and the outcome is unpredictable. In addition, trade secrets may be independently developed by others in a manner that could prevent legal recourse by us. If any of our confidential or proprietary information, such as our trade secrets, were to be disclosed or misappropriated, or if any such information was independently developed by a competitor, our competitive position could be harmed.

We may not be able to enforce our intellectual property rights throughout the world.

The laws of some foreign countries do not protect proprietary rights to the same extent as the laws of the United States, and many companies have encountered significant challenges in establishing and enforcing their proprietary rights outside of the United States. These challenges can be caused by the absence of rules and methods for the establishment and enforcement of intellectual property rights outside of the United States. In addition, the legal systems of some countries, particularly developing countries, do not favor the enforcement of patents and other intellectual property protection, especially those relating to healthcare. This could make it difficult for us to stop the infringement of our patents, if obtained, or the misappropriation of our other intellectual property rights. For example, many foreign countries have compulsory licensing laws under which a patent owner must grant licenses to third parties. In addition, many countries limit the enforceability of patents against third parties, including government agencies or government contractors. In these countries, patents may provide limited or no benefit. Patent protection must ultimately be sought on a country-by-country basis, which is an expensive and time-consuming process with uncertain outcomes. Accordingly, we may choose not to seek patent protection in certain countries, and we will not have the benefit of patent protection in such countries. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business. Accordingly, our efforts to protect our intellectual property rights in such countries may be inadequate. In addition, changes in the law and legal decisions by courts in the United States and foreign countries may affect our ability to obtain adequate protection for our technology and the enforcement of intellectual property.

Third parties may assert that our employees or consultants have wrongfully used or disclosed confidential information or misappropriated trade secrets.

We employ individuals who were previously employed at universities or genetic testing, diagnostic or other healthcare companies, including our competitors or potential competitors. Although we try to ensure that our employees and consultants do not use the proprietary information or know-how of others in their work for us, we may be subject to claims that we or our employees or consultants have inadvertently or otherwise used or disclosed intellectual property, including trade secrets or other proprietary information, of a former employer or other third parties. Further, we may be subject to ownership disputes in the future arising, for example, from conflicting obligations of consultants or others who are involved in developing our intellectual property. Litigation may be necessary to defend against these claims. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees.

Risks related to being a public company

We incur increased costs and demands on management as a result of compliance with laws and regulations applicable to public companies, which could harm our operating results.

As a public company, we incur significant legal, accounting and other expenses, including costs associated with public company reporting requirements. In addition, the Sarbanes-Oxley Act of 2002, or the Sarbanes-Oxley Act, as well as rules implemented by the Securities and Exchange Commission, or SEC, and the New York Stock Exchange, or NYSE, impose a number of requirements on public companies, including with respect to corporate governance practices. The SEC and other regulators have continued to adopt new rules and regulations and make additional changes to existing regulations that require our compliance. In addition, the Dodd-Frank Wall Street Reform and Consumer Protection Act, or the Dodd-Frank Act, enacted in 2010, includes significant corporate governance and executive-compensation-related provisions. Our management and other personnel need to devote a substantial amount of time to these compliance and disclosure obligations. If these requirements divert the attention of our management and personnel from other aspects of our business concerns, they could have a material adverse effect on our business, financial condition and results of operations. Moreover, these rules and regulations applicable to public companies substantially increase our legal, accounting and financial compliance costs, require that we hire additional personnel and make some activities more time consuming and costly. It may also be more expensive for us to obtain director and officer liability insurance.

If we are unable to maintain effective internal control over financial reporting, investors may lose confidence in the accuracy and completeness of our reported financial information and the market price of our common stock may be negatively affected.

We are required to maintain internal control over financial reporting and to report any material weaknesses in such internal controls. Section 404 of the Sarbanes-Oxley Act requires that we evaluate and determine the effectiveness of our internal control over financial reporting and provide a management report on our internal control over financial reporting. If we have a material weakness in our internal control over financial reporting, we may not detect errors on a timely basis and our financial statements may be materially misstated. We have compiled the system and process documentation necessary to perform the evaluation needed to comply with Section 404 of the Sarbanes-Oxley Act. As we acquire companies, we will need to establish proper controls and integrate them into our internal control system. We need to maintain and enhance these processes and controls as we grow and we have required, and may continue to require, additional personnel and resources to do so.

During the evaluation and testing process, if we identify one or more material weaknesses in our internal controls, our management will be unable to conclude that our internal control over financial reporting is effective. Our independent registered public accounting firm is required to issue an attestation report on the effectiveness of our internal control over financial reporting every fiscal year. Even if our management concludes that our internal control over financial reporting is effective, our independent registered public accounting firm may conclude that there are material weaknesses with respect to our internal controls or the level at which our internal controls are documented, designed, implemented or reviewed.

If we are unable to conclude that our internal control over financial reporting is effective, or if our auditors were to express an adverse opinion on the effectiveness of our internal control over financial reporting because we had one or more material weaknesses, investors could lose confidence in the accuracy and completeness of our financial disclosures, which could cause the price of our common stock to decline. Internal control deficiencies could also result in the restatement of our financial results in the future.

Risks related to our indebtedness

The terms of our credit agreement require us to meet certain operating and financial covenants and place restrictions on our operating and financial flexibility. If we raise additional capital through debt financing, the terms of any new debt could further restrict our ability to operate our business.

In October 2020, we entered into a credit agreement with Perceptive Credit Holdings II, LP, pursuant to which we borrowed an aggregate principal amount of $135.0 million, or the 2020 Term Loan. The 2020 Term Loan is secured by a first priority lien on all of our and our subsidiaries' assets (including our intellectual property) and is guaranteed by our subsidiaries, in each case, excluding certain excluded assets and immaterial subsidiaries. If the 2020 Term Loan is prepaid, we may be required to pay a prepayment fee of up to 6% and a make-whole fee, in each case depending on when the prepayment is made.

The credit agreement restricts our ability to pursue certain mergers, acquisitions, amalgamations or consolidations, other than permitted acquisitions, that we may believe to be in our best interest. In addition, the credit agreement contains financial covenants that require us to maintain a minimum cash balance and minimum quarterly revenue levels. If we default under the credit agreement, the lender will be able to declare all obligations immediately due and payable, including prepayment fees and other obligations. The lender could declare an event

of default under the credit agreement upon the occurrence of any event that it interprets as a material adverse change or material adverse effect, each as defined under the credit agreement. Any declaration by the lender of an event of default could significantly harm our business and prospects and could cause the price of our common stock to decline.

If we raise any additional debt financing, the terms of such additional debt could further restrict our operating and financial flexibility.

We have a large amount of debt, servicing our debt requires a significant amount of cash, and our debt service obligations may prevent us from taking actions that we would otherwise consider to be in our best interests.

In September 2019, we issued $350.0 million aggregate principal amount of our convertible senior notes due 2024 in a private placement, in October 2020 we entered into our credit agreement and borrowed $135.0 million through the 2020 Term Loan and in April 2021 we issued $1,150.0 million aggregate principal amount of our convertible senior notes due 2028 in a private placement.

Our substantial leverage could have significant negative consequences for our future operations, including:

•increasing our vulnerability to general adverse economic and industry conditions;

•limiting our ability to obtain additional financial for working capital, acquisitions, research and development expenditures, and general corporate purposes;

•requiring the dedication of a substantial portion of our expected cash flow or our existing cash to service our indebtedness, thereby reducing the amount of our cash available for other purposes;

•limiting our flexibility in planning for, or reacting to, changes in our business and the industry in which we compete; or

•placing us at a possible competitive disadvantage compared to less leveraged competitors and competitors that have better access to capital resources.

Our ability to make scheduled payments of the principal of, to pay interest on or to refinance our indebtedness depends on our future performance, which is subject to economic, financial, competitive and other factors beyond our control. Our business may not generate cash flow from operations in the future sufficient to service our debt and make necessary capital expenditures. If we are unable to generate such cash flow, we may be required to adopt one or more alternatives, such as selling assets, restructuring debt or obtaining additional equity capital on terms that may be onerous or highly dilutive. Our ability to refinance our indebtedness will depend on the capital markets and our financial condition at such time. We may not be able to engage in any of these activities or engage in these activities on desirable terms, which could result in a default on our debt obligations.

We may not have the ability to raise the funds necessary to settle conversions of our convertible senior notes in cash or to repurchase the notes upon a fundamental change, and our current credit agreement contains and our future debt may contain limitations on our ability to pay cash upon conversion or repurchase of the notes.

Holders of our convertible senior notes have the right to require us to repurchase all or any portion of their notes upon the occurrence of a fundamental change at a fundamental change repurchase price equal to 100% of the principal amount of the notes to be repurchased, plus accrued and unpaid interest, if any. The repurchase price for our convertible senior notes due 2028 will also include unpaid interest on those notes to the maturity date. In addition, upon conversion of the notes, unless we elect to deliver solely shares of our common stock to settle such conversion (other than paying cash in lieu of delivering any fractional share), we will be required to make cash payments in respect of the notes being converted. However, we only have limited ability to make those cash payments under our credit agreement and, even if the credit agreement limitations are no longer in effect, we may not have enough available cash or be able to obtain financing at the time we are required to make repurchases of notes surrendered therefor or notes being converted. In addition, our ability to repurchase the notes or to pay cash upon conversions of the notes may be limited by law, by regulatory authority or by agreements governing our future indebtedness. Our failure to repurchase notes at a time when the repurchase is required by the indentures governing the notes or to pay any cash payable on future conversions of the notes as required by the indentures would constitute a default under the relevant indenture. A default under an indenture or the occurrence of the fundamental change itself could also lead to a default under our credit agreement and any agreements governing our future indebtedness. If the repayment of the related indebtedness were to be accelerated after any applicable notice or grace periods, we may not have sufficient funds to repay the indebtedness and to repay or repurchase our convertible senior notes.

The conditional conversion feature of our convertible senior notes due 2024, if triggered, may adversely affect our financial condition and operating results.

In the event the conditional conversion feature of our convertible senior notes due 2024 is triggered, holders of such notes will be entitled to convert the notes at any time during specified periods at their option. If one or more holders elect to convert their notes, unless we elect to satisfy our conversion obligation by delivering solely shares of our common stock (other than paying cash in lieu of delivering any fractional share), we would be required to settle a portion or all of our conversion obligation through the payment of cash, which could adversely affect our liquidity. In addition, even if holders do not elect to convert their notes, we could be required under applicable accounting rules to reclassify all or a portion of the outstanding principal of the notes as a current rather than long-term liability, which would result in a material reduction of our net working capital.

General risk factors

Our stock price is volatile, and you may not be able to sell shares of our common stock at or above the price you paid.

The trading price of our common stock is volatile and could be subject to wide fluctuations in response to various factors, some of which are beyond our control. These factors include:

•actual or anticipated fluctuations in our operating results;

•competition from existing tests or new tests that may emerge;

•announcements by us or our competitors of significant acquisitions, strategic partnerships, joint ventures, collaborations or capital commitments;

•failure to meet or exceed financial estimates and projections of the investment community or that we provide to the public;

•issuance of new or updated research or reports by securities analysts or changed recommendations for our stock;

•our focus on long-term goals over short-term results;

•the level of short interest in our stock, and the effect of short sellers on the price of our stock;

•the timing and magnitude of our investments in the growth of our business;

•actual or anticipated changes in regulatory oversight of our business;

•additions or departures of key management or other personnel;

•disputes or other developments related to our intellectual property or other proprietary rights, including litigation;

•changes in reimbursement by current or potential payers;

•general economic and market conditions; and

•issuances of significant amounts of our common stock.

In addition, the stock market in general, and the market for stock of life sciences companies in particular, has experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of those companies. Broad market and industry factors, including COVID-19, may seriously affect the market price of our common stock, regardless of our actual operating performance. In addition, in the past, following periods of volatility in the overall market and the market price of a particular company's securities, securities class action litigation has often been instituted against these companies. This litigation, if instituted against us, could result in substantial costs and a diversion of our management's attention and resources.

If securities or industry analysts issue an adverse opinion regarding our stock or do not publish research or reports about our company, our stock price and trading volume could decline.

The trading market for our common stock will depend in part on the research and reports that equity research analysts publish about us and our business. We do not control these analysts or the content and opinions included in their reports. Securities analysts may elect not to provide research coverage of our company and such lack of research coverage may adversely affect the market price of our common stock. The price of our common stock could also decline if one or more equity research analysts downgrade our common stock, change their price targets, issue other unfavorable commentary or cease publishing reports about us or our business. If one or more equity research analysts cease coverage of our company, we could lose visibility in the market, which in turn could cause our stock price to decline.

We have never paid dividends on our capital stock, and we do not anticipate paying dividends in the foreseeable future.

We have never paid dividends on any of our capital stock and currently intend to retain any future earnings to fund the growth of our business. In addition, the terms of our credit agreement restrict our ability to pay dividends. Any determination to pay dividends in the future will be at the discretion of our board of directors and will depend on our financial condition, operating results, capital requirements, general business conditions and other factors that our board of directors may deem relevant. As a result, capital appreciation, if any, of our common stock will be the sole source of gain for the foreseeable future.

Anti-takeover provisions in our charter documents and under Delaware law could discourage, delay or prevent a change in control and may affect the trading price of our common stock.

Provisions in our restated certificate of incorporation and our amended and restated bylaws may have the effect of delaying or preventing a change of control or changes in our management. Our restated certificate of incorporation and amended and restated bylaws include provisions that:

•authorize our board of directors to issue, without further action by the stockholders, up to 20,000,000 shares of undesignated preferred stock;

•require that any action to be taken by our stockholders be effected at a duly called annual or special meeting and not by written consent;

•specify that special meetings of our stockholders can be called only by our board of directors, our chair of the board or our chief executive officer;

•establish an advance notice procedure for stockholder approvals to be brought before an annual meeting of our stockholders, including proposed nominations of persons for election to our board of directors;

•establish that our board of directors is divided into three classes, Class I, Class II and Class III, with each class serving staggered terms;

•provide that our directors may be removed only for cause;

•provide that vacancies on our board of directors may, except as otherwise required by law, be filled only by a majority of directors then in office, even if less than a quorum; and

•require a super-majority of votes to amend certain of the above-mentioned provisions as well as to amend our bylaws generally.

In addition, we are subject to the provisions of Section 203 of the Delaware General Corporation Law regulating corporate takeovers. Section 203 generally prohibits us from engaging in a business combination with an interested stockholder subject to certain exceptions.

Our certificate of incorporation designates the Court of Chancery of the State of Delaware as the sole and exclusive forum for certain types of actions and proceedings that may be initiated by our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers or other employees.

Our certificate of incorporation provides that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for:

•any derivative action or proceeding brought on our behalf;

•any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers, or other employees to us or our stockholders;

•any action asserting a claim arising pursuant to any provision of the Delaware General Corporation Law; or

•any action asserting a claim against us governed by the internal affairs doctrine.

Section 27 of the Exchange Act creates exclusive federal jurisdiction over all suits brought to enforce any duty or liability created by the Exchange Act or the rules and regulations thereunder. As a result, the exclusive forum provision in our certificate of incorporation will not apply to suits brought to enforce any duty or liability created by the Exchange Act or any other claim for which the federal courts have exclusive jurisdiction. Section 22 of the Securities Act creates concurrent jurisdiction for federal and state courts over all suits brought to enforce any duty or liability created by the Securities Act or the rules and regulations thereunder. As a result, the exclusive forum provision in our certificate of incorporation will not apply to suits brought to enforce any duty or liability created by the Securities Act or any other claim for which the federal and state courts have concurrent jurisdiction.

Any person or entity purchasing or otherwise acquiring any interest in shares of our capital stock shall be deemed to have notice of and consented to the provisions of our certificate of incorporation described above. This choice of forum provision may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage such lawsuits against us and our directors, officers and other employees. Alternatively, if a court were to find these provisions of our certificate of incorporation inapplicable to, or unenforceable in respect of, one or more of the specified types of actions or proceedings, we may incur additional costs associated with resolving such matters in other jurisdictions, which could adversely affect our business, financial condition or results of operations.

Sales of a substantial number of shares of our common stock in the public market could cause our stock price to fall.

Sales of a substantial number of shares of our common stock in the public market or the perception that these sales might occur could depress the market price of our common stock and could impair our ability to raise capital through the sale of additional equity securities. As of September 30, 2021, we had outstanding 226.2 million shares of our common stock, options to purchase 3.1 million shares of our common stock (of which 2.7 million were exercisable as of that date) and outstanding restricted stock units, or RSUs, representing 15.5 million shares of our common stock (which includes an estimated number of RSUs, subject to certain employee's continued service with us, or time-based RSUs, and RSUs that are performance based RSUs, or PRSUs, granted in connection with an acquisition). The foregoing does not include shares that may be issuable in connection with indemnification hold-backs and contingent consideration related to our acquisitions other than ArcherDX and up to 8.0 million shares which may be issuable upon the achievement of a milestone related to our acquisition of ArcherDX, or shares that may be issuable in the future in connection with our convertible senior notes or pursuant to our 2021 Sales Agreement. The sale or the availability for sale of a large number of shares of our common stock in the public market could cause the price of our common stock to decline.

ITEM 2. Unregistered Sales of Equity Securities and Use of Proceeds.

During the three months ended September 30, 2021, we issued an aggregate of 6,274,040 shares as upfront merger consideration upon the closing of the acquisition of Ciitizen. We also agreed to issue up to another 799,422 shares, with these additional shares currently subject to certain hold-back arrangements. These issuance are in reliance upon the exemption from registration provided by Section 4(a)(2) of the Securities Act of 1933.

ITEM 6. Exhibits.

Exhibit Number	Description
10.1	Amendment No. 2, dated as of September 20, 2021 , by and among Invitae Corporation, the subsidiary guarantors from time to time party thereto, the lenders party thereto and Perceptive Credit Holdings III, LP, as the Administrative Agent, to Credit Agreement and Guaranty, dated as of October 2, 2020, by and among Invitae Corporation, the subsidiary guarantors from time to time party thereto, the lenders party thereto and Perceptive Credit Holdings III, LP, as the Administrative Agent.
10.2#	Invitae Corporation Employee Stock Purchase Plan, as amended and restated as of October 14, 2021.
10.3#	Invitae Corporation 2015 Stock Incentive Plan, as amended and restated as of August 31, 2021.
10.4#	Form of Global Restricted Stock Unit Agreement under the Invitae Corporation 2015 Stock Incentive Plan.
31.1	Principal Executive Officer's Certifications Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Principal Financial Officer's Certifications Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1*	Certification Pursuant to 18 U.S.C. § 1350 (Section 906 of Sarbanes-Oxley Act of 2002).
32.2*	Certification Pursuant to 18 U.S.C. § 1350 (Section 906 of Sarbanes-Oxley Act of 2002).
101.INS	Inline XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH	Inline XBRL Taxonomy Extension Schema
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase
104	Cover Page Interactive Data File (the cover page XBRL tags are embedded within the Inline XBRL document).

# Indicates a management contract or compensatory plan or arrangement.

* In accordance with Item 601(b)(32)(ii) of Regulation S-K and SEC Release No. 34-47986, the certifications furnished in Exhibits 32.1 and 32.2 hereto are deemed to accompany this Form 10-Q and will not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934 (the "Exchange Act") or deemed to be incorporated by reference into any filing under the Exchange Act or the Securities Act of 1933 except to the extent that the registrant specifically incorporates it by reference.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

INVITAE CORPORATION

By: /s/ Sean E. George, Ph.D.
Sean E. George, Ph.D.
President and Chief Executive Officer
Principal Executive Officer

By: /s/ Yafei (Roxi) Wen
Yafei (Roxi) Wen
Chief Financial Officer
Principal Financial Officer

Date: November 9, 2021

Exhibit 10.1

Execution Version

AMENDMENT NO. 2 TO CREDIT AGREEMENT AND GUARANTY

This AMENDMENT NO. 2 TO CREDIT AGREEMENT AND GUARANTY, dated as of September 20, 2021 (this "***Amendment***"), is by and among INVITAE CORPORATION, a Delaware corporation (the "***Borrower***"), the Subsidiary Guarantors party hereto, the Lenders party hereto, and PERCEPTIVE CREDIT HOLDINGS III, LP, a Delaware limited partnership, as administrative agent for the Lenders (in such capacity, together with its successors and assigns, the "***Administrative Agent***"). Reference is made to the Credit Agreement and Guaranty, dated as of October 2, 2020, among the Borrower, certain subsidiaries of the Borrower from time to time party thereto, the lenders from time to time party thereto (the "***Lenders***") and the Administrative Agent (as amended, supplemented or otherwise modified from time to time, the "***Credit Agreement***"). Capitalized terms used herein without definition shall have the same meanings as set forth in the Credit Agreement, as amended by this Amendment.

RECITALS

WHEREAS, the Borrower has requested that the Administrative Agent and the Lenders amend clause (g) of Section 9.01 of the Credit Agreement; and

WHEREAS, the Administrative Agent and the Lenders are willing to do so on the terms and subject to the conditions set forth herein.

NOW, THEREFORE, the parties hereto hereby agree as follows:

ARTICLE I
AMENDMENT TO CREDIT AGREEMENT; OTHER AGREEMENTS

SECTION 1.01. Amendment to the Credit Agreement. As of the Amendment Effective Date, the Credit Agreement is hereby amended as follows:

(a) clause (g) of Section 9.01 of the Credit Agreement is hereby amended and restated in its entirety to read as follows:

"(g) ordinary course of business equipment financing and leasing and Capital Lease Obligations; provided that (i) if secured, the collateral therefor consists solely of the assets being financed, the products and proceeds thereof and books and records related thereto, and (ii) the aggregate outstanding principal amount of such Indebtedness (inclusive of all Capital Lease Obligations) shall not exceed $50,000,000 (or the Equivalent Amount in other currencies) at any time;"

(b) the proviso to Section 9.01 of the Credit Agreement is hereby amended and restated in its entirety to read as follows:

"provided that, in the case of Indebtedness permitted under **clauses (g)**, **(i)(y)** and **(o)** above, the aggregate amount of such Indebtedness shall in no event exceed $100,000,000 at any time outstanding."

ARTICLE II
ACKNOWLEDGEMENT, AGREEMENT AND CONSENT

SECTION 2.01. Each Obligor confirms and agrees that, notwithstanding the effectiveness of this Amendment, the obligations of such Obligor under each Loan Document to which such Obligor is a party shall not be impaired and each Loan Document to which such Obligor is a party is, and shall continue to be, in full force and effect and is hereby confirmed and ratified in all respects.

SECTION 2.02. Each Obligor hereby acknowledges and agrees that the Guaranteed Obligations will include all Obligations under, and as defined in, the Credit Agreement as amended by this Amendment.

ARTICLE III
CONDITIONS PRECEDENT

SECTION 3.01. Conditions to Effectiveness of this Amendment. This Amendment shall become effective only upon, and shall be subject to, the prior or simultaneous satisfaction or waiver of each of the following conditions precedent in a manner reasonably satisfactory to the Administrative Agent (the date satisfaction of such conditions being referred to as the "***Amendment Effective Date***"):

(a) **Executed Amendment**. The Administrative Agent shall have received this Amendment, duly executed by the Borrower, the Subsidiary Guarantors, the Administrative Agent and each of the Lenders.

(b) **Costs and Expenses, Etc**. The Administrative Agent shall have received for its account and the account of each Lender all reasonable and documented fees, costs and expenses due and payable to them pursuant to Section 14.03 of the Credit Agreement (including the Administrative Agent's and each Lender's reasonable and documented legal fees and out-of-pocket expenses).

ARTICLE IV
MISCELLANEOUS

SECTION 4.01. Governing Law; Jurisdiction; Jury Trial. This Amendment and the rights and obligations of the parties hereunder shall be governed by, and construed in accordance with, the law of the State of New York. The jurisdiction and waiver of jury trial provisions set forth in Sections 14.10 and 14.11 of the Credit Agreement, respectively, are incorporated herein by reference *mutatis mutandis*.

SECTION 4.02. Effect of Amendment.

(a) On and after the Amendment Effective Date, each reference in any Loan Document (other than this Amendment) to the Credit Agreement shall mean and be a reference to the Credit Agreement as amended by this Amendment.

(b) This Amendment shall constitute a Loan Document for all purposes of the Credit Agreement.

(c) Except as expressly and specifically provided herein, the execution, delivery and effectiveness of this Amendment shall not (i) amend or otherwise modify any term or provision of the Credit Agreement or any other Loan Document; or (ii) operate as a waiver of any right, power or remedy of any holder of Obligations, the Administrative Agent or any Lender under any Loan Document or applicable Law, or any term or provision of the Credit Agreement or any other Loan Document.

SECTION 4.03. Counterparts; Electronic Signatures. This Amendment may be executed in any number of counterparts, all of which taken together shall constitute one and the same instrument and any of the parties hereto may execute this Amendment by signing any such counterpart. Delivery of an executed signature page of this Amendment by facsimile transmission or electronic transmission (in PDF format) shall be effective as delivery of a manually executed counterpart hereof. Any signature (including, without limitation, any electronic symbol or process attached to, or logically associated with, a contract or other record and adopted by a person with the intent to sign, authenticate or accept such contract or record) and any contract formation or record-keeping, in each case, through electronic means, shall have the same legal validity and enforceability as a manually executed signature or use of a paper-based recording system to the fullest extent permitted by applicable law.

SECTION 4.04. Binding Nature. The provisions of this Amendment shall be binding upon and shall inure to the benefit of the parties hereto and their respective successors and permitted assigns; provided that no Obligor may assign or otherwise transfer any of its rights or obligations hereunder without the prior written consent of the Administrative Agent.

SECTION 4.05. Captions. The captions and section headings appearing herein are included solely for convenience of reference and are not intended to affect the interpretation of any provision of this Amendment.

SECTION 4.06. Severability. If any provision hereof is found by a court to be invalid or unenforceable, to the fullest extent permitted by any applicable Law the parties agree that such invalidity or unenforceability shall not impair the validity or enforceability of any other provision hereof.

SECTION 4.07. Integration. This Amendment constitutes the entire agreement among the parties with respect to the subject matter hereof and supersedes any and all previous agreements and understanding, oral or written, relating to the subject matter hereof.

[Signature pages to follow]

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be duly executed and delivered as of the date hereof.

BORROWER

INVITAE CORPORATION

By /s/ Tom Brida
Name: Tom Brida
Title: General Counsel

[*Signature page to Amendment No. 2 to Credit Agreement and Guaranty*]

SUBSIDIARY GUARANTORS

GENETIC SOLUTIONS, LLC
By Invitae Corporation, its Sole Member

By /s/ Tom Brida
Name: Tom Brida
Title: General Counsel

GOOD START GENETICS, INC.

By /s/ Sean George
Name: Sean George
Title: Chief Executive Officer

OMMDOM INC.

By /s/ Sean George
Name: Sean George
Title: Chief Executive Officer

YOUSCRIPT, LLC

By /s/ Tom Brida
Name: Tom Brida
Title: President

ARCHERDX, LLC

By /s/ Tom Brida
Name: Tom Brida
Title: President

ARCHERDX CLINICAL SERVICES, INC.

By /s/ Tom Brida
Name: Tom Brida
Title: General Counsel and Secretary

REFERENCE GENOMICS, LLC

By /s/ Tom Brida
Name: Tom Brida
Title: President

GENOSITY, LLC

By /s/ Tom Brida
Name: Tom Brida
Title: President

MEDNEON LLC
By Invitae Corporation, its Sole Member

By /s/ Tom Brida
Name: Tom Brida
Title: General Counsel

PERCEPTIVE CREDIT HOLDINGS III, LP, as the Administrative Agent and a Lender

By: PERCEPTIVE CREDIT OPPORTUNITIES GP, LLC, its general partner

By /s/ Sandeep Dixit
Name: Sandeep Dixit
Title: Chief Credit Officer

By /s/ Sam Chawla
Name: Sam Chawla
Title: Portfolio Manager

Exhibit 10.2

INVITAE CORPORATION
EMPLOYEE STOCK PURCHASE PLAN

TABLE OF CONTENTS

INVITAE CORPORATION

EMPLOYEE STOCK PURCHASE PLAN

SECTION 1Purpose of the Plan.

The Plan was initially adopted by the Board on January 8, 2015, and became effective on February 12, 2015 (the "*Effective Date*"). The Plan was amended by the Board effective as of November 15, 2019. On October 14, 2021 the Board amended and restated the Plan.

The purpose of the Plan is to provide Eligible Employees with an opportunity to increase their proprietary interest in the success of the Company by purchasing Stock from the Company on favorable terms and to pay for such purchases through payroll deductions and other contributions as may be provided in the terms of an Offering.

The Company intends to make two types of offerings under the Plan: offerings that are intended to qualify as an "employee stock purchase plan" under Section 423 of the Code (each, a "*Section 423 Offering*") and offerings that are not intended to qualify as an "employee stock purchase plan" under Section 423 of the Code (each, a "*Non-423 Offering*"). The Section 423 Offerings will be construed so as to extend and limit Plan participation in a uniform and nondiscriminatory basis consistent with the requirements of Section 423 of the Code. An option to purchase shares of Common Stock under the Non-423 Offering will be granted pursuant to any rules, procedures, agreements, appendices or sub plans adopted by the Committee designed to achieve tax, securities laws, or any other objectives. Except as otherwise provided herein, the Non-423 Offering will operate and be administered in the same manner as the Section 423 Offering.

SECTION 2Definitions.

(a)"*Affiliate*" means any entity that, directly or indirectly through one or more intermediaries, controls, is controlled by or is under the common control with, the Company.

(b)"*Board*" means the Board of Directors of the Company, as constituted from time to time.

(c)"*Cashless Participation Program*" shall mean the program described in Section 5(e).

(d)"*Cashless Participation Program Provider*" means the Company, its appointed plan administrator, and/or the Cashless Participation Program loan provider.

(e)"*Code*" means the U.S. Internal Revenue Code of 1986, as amended.

(f)"*Committee*" means a committee designated by the Board, as described in Section 3.

(g)"*Company*" means Invitae Corporation, a Delaware corporation.

(h)"*Compensation*" means the base salary, wages, and variable compensation (including bonuses, incentive compensation, commissions, overtime pay and shift premiums) paid in cash to a Participant by a Participating Company, without reduction for any pre-tax contributions made by the Participant under sections 401(k) or 125 of the Code. "*Compensation*" shall exclude all non-cash items, moving or relocation allowances, cost-of-living equalization payments, car allowances, tuition reimbursements, imputed income attributable to cars or life insurance, severance pay, fringe benefits, contributions or benefits received under employee benefit plans, income attributable to the exercise of stock options, and similar items. The Committee shall determine whether a particular item is included in Compensation.

(i)"*Corporate Reorganization*" means:

(i)The consummation of a merger or consolidation of the Company with or into another entity, or any other corporate reorganization; or

(ii)The sale, transfer or other disposition of all or substantially all of the Company's assets or the complete liquidation or dissolution of the Company.

(j)"*Eligible Employee*" means any employee of a Participating Company whose customary employment is for more than five months per calendar year and for 20 or more hours per week; provided, however, that any employee who is employed for five months or less per calendar year or for less than 20 hours per week would be considered an Eligible Employee if his or her participation in the Plan is required by applicable law or regulations.

The foregoing notwithstanding, an individual shall not be considered an Eligible Employee if his or her participation in the Plan is prohibited by the law of any country which has jurisdiction over him or her.

(k)"*Exchange Act*" means the U.S. Securities Exchange Act of 1934, as amended.

(l)"*Fair Market Value*" means the fair market value of a share of Stock, determined by the Committee as follows:

(i)If Stock was traded on any established national securities exchange including the New York Stock Exchange or the Nasdaq Stock Market on the date in question, then the Fair Market Value shall be equal to the closing price as quoted on such exchange (or the exchange with the greatest volume of trading in the Stock) on such date; or

(ii)If the foregoing provision is not applicable, then the Fair Market Value shall be determined by the Committee in good faith on such basis as it deems appropriate.

For any date that is not a Trading Day, the Fair Market Value of a share of Stock for such date shall be determined by using the closing sale price for the immediately preceding Trading Day. Whenever possible, the determination of Fair Market Value by the Committee shall be

based on the prices reported in the Wall Street Journal or as reported directly to the Company by the stock exchange. Such determination shall be conclusive and binding on all persons.

(m)"*Offering*" means the grant of options to purchase shares of Stock under the Plan to Eligible Employees.

(n)"*Offering Date*" means the first day of an Offering.

(o)"*Offering Period*" means a period with respect to which the right to purchase Stock may be granted under the Plan, as determined pursuant to Section 4(a).

(p)"*Participant*" means an Eligible Employee who elects to participate in the Plan, as provided in Section 4(b).

(q)"*Participating Company*" means (i) the Company and (ii) each present or future Subsidiary or Affiliate designated by the Committee as a Participating Company. The Committee may so designate any Subsidiary or Affiliate, or revoke any such designation, at any time and from time to time, either before or after the Plan is approved by the stockholders, and may further designate such companies or Participants as participating in the 423 Component or the Non-423 Component. The Committee may also determine which Affiliates or Eligible Employees may be excluded from participation in the Plan, to the extent consistent with Section 423 of the Code or as implemented under a Non-423 Offering, and determine which Participating Company or Companies will participate in separate Offerings (to the extent that the Company makes separate Offerings). For purposes of Section 423 Offerings, only the Company and its Subsidiaries may be Participating Companies; provided, however, that at any given time, a Subsidiary that is a Participating Company in a Section 423 Offering will not be a Participating Company in a Non-423 Offering.

(r)"*Plan*" means this Invitae Corporation Employee Stock Purchase Plan, as it may be amended from time to time.

(s)"*Plan Account*" means the account established for each Participant pursuant to Section 8(a).

(t)"*Purchase Date*" means one or more dates during an Offering Period on which shares of Stock may be purchased pursuant to the terms of the Offering.

(u)"*Purchase Period*" means one or more successive periods during an Offering Period, beginning on the Offering Date or on the day after a Purchase Date, and ending on the next succeeding Purchase Date.

(v)"*Purchase Price*" means the price at which Participants may purchase shares of Stock under the Plan, as determined pursuant to Section 8(b).

(w)"*Stock*" means the Common Stock of the Company.

(x)"*Subsidiary*" means any corporation (other than the Company) in an unbroken chain of corporations beginning with the Company, if each of the corporations other than the last

corporation in the unbroken chain owns stock possessing 50% or more of the total combined voting power of all classes of stock in one of the other corporations in such chain.

(y)"*Trading Day*" means a day on which the national stock exchange on which the Stock is traded is open for trading.

SECTION 3Administration Of The Plan.

(a)Committee Composition. The Plan shall be administered by the Committee. The Committee shall consist exclusively of one or more directors of the Company, who shall be appointed by the Board.

(b)Committee Responsibilities. The Committee shall have full power and authority, subject to the provisions of the Plan, to promulgate such rules and regulations as it deems necessary for the proper administration of the Plan, to interpret the provisions and supervise the administration of the Plan, and to take all action in connection therewith or in relation thereto as it deems necessary or advisable. Any decision reduced to writing and signed by all of the members of the Committee shall be fully effective as if it had been made at a meeting duly held. The Committee's determinations under the Plan, unless otherwise determined by the Board, shall be final and binding on all persons. The Company shall pay all expenses incurred in the administration of the Plan. No member of the Committee shall be personally liable for any action, determination, or interpretation made in good faith with respect to the Plan, and all members of the Committee shall be fully indemnified by the Company with respect to any such action, determination or interpretation. The Committee may adopt such rules, guidelines and forms as it deems appropriate to implement the Plan. Notwithstanding anything to the contrary in the Plan, the Board may, in its sole discretion, at any time and from time to time, resolve to administer the Plan. In such event, the Board shall have all of the authority and responsibility granted to the Committee herein.

(c)International Administration. The Board or Committee may establish sub plans (which need not qualify under Section 423 of the Code) and initiate separate Offerings for the purpose of (i) facilitating participation in the Plan by non-U.S. employees in compliance with foreign laws and regulations without affecting the qualification of the remainder of the Plan under Section 423 of the Code or (ii) qualifying the Plan for preferred tax treatment under foreign tax laws (which sub plans, at the Board or Committee's discretion, may provide for allocations of the authorized shares reserved for issue under the Plan as set forth in Section 14(a)). Notwithstanding anything in the Plan to the contrary, the rules, guidelines, and forms of such sub plans (or Offerings thereunder) may take precedence over other provisions of the Plan, with the exception of Section 14(a), but unless otherwise superseded by the terms of such sub plan, the provisions of the Plan shall govern the operation of such sub plan. Alternatively and in order to facilitate compliance with the laws or regulations of a foreign jurisdiction, the Board and Committee shall have the power, in their discretion, to grant options in a Non-423 Offering to citizens or residents of a non-U.S. jurisdiction (without regard to whether they are also citizens of the United States or resident aliens) that provide terms which are less or more favorable than the terms of options granted under the same Offering to employees resident in the United States.

SECTION 4Enrollment And Participation.

(a)Offering Periods. While the Plan is in effect, the Committee may from time to time grant options to purchase shares of Stock pursuant to the Plan to Eligible Employees during a specified Offering Period. Each such Offering shall be in such form and shall contain such terms and conditions as the Committee shall determine, subject to compliance with the terms and conditions of the Plan (which may be incorporated by reference) and, as applicable, the requirements of Section 423 of the Code, including the requirement that all Eligible Employees have the same rights and privileges. The Committee shall specify prior to the commencement of each Offering (i) the period during which the Offering shall be effective, which may not exceed 27 months from the Offering Date and may include one or more successive Purchase Periods within the Offering, (ii) the Purchase Dates and Purchase Price for shares of Stock which may be purchased pursuant to the Offering, and (iii) if applicable, any limits on the number of shares purchasable by a Participant, or by all Participants in the aggregate, during any Offering Period or, if applicable, Purchase Period, in each case consistent with the limitations of the Plan. The Committee shall have the discretion to provide for the automatic termination of an Offering following any Purchase Date on which the Fair Market Value of a share of Stock is equal to or less than the Fair Market Value of a share of Stock on the Offering Date, and for the Participants in the terminated Offering to be automatically re-enrolled in a new Offering that commences immediately after such Purchase Date. The terms and conditions of each Offering need not be identical, and shall be deemed incorporated by reference and made a part of the Plan.

(b)Enrollment. Any individual who qualifies as an Eligible Employee may elect to become a Participant in the Plan for such Offering Period by executing the enrollment form prescribed for this purpose by the Company. The enrollment form shall be filed with the Company in accordance with such procedures as may be established by the Company.

(c)Duration of Participation. Once enrolled in the Plan, a Participant shall continue to participate in the Plan until he or she ceases to be an Eligible Employee or withdraws from the Plan under Section 6(a). A Participant who withdrew from the Plan under Section 6(a) may again become a Participant, if he or she then is an Eligible Employee, by following the procedure described in Subsection (b) above. A Participant whose employee contributions were discontinued automatically under Section 9(b) shall automatically resume participation at the beginning of the earliest Offering Period ending in the next calendar year, if he or she then is an Eligible Employee. When a Participant reaches the end of an Offering Period but his or her participation is to continue, then such Participant shall automatically be re-enrolled for the Offering Period that commences immediately after the end of the prior Offering Period, and each Participant who participates in the Cashless Participation Program for an Offering Period will continue to participate in the Cashless Participation Program for subsequent Offering Periods.

(d)Non-U.S. Employees. An Eligible Employee who works for a Participating Company and is a citizen or resident of a jurisdiction other than the United States (without regard to whether such individual also is a citizen or resident of the United States or is a resident alien (within the meaning of Section 7701(b)(1)(A) of the Code)) may be excluded from participation in the Plan or an Offering if the participation of such Eligible Employee is prohibited under the laws of the applicable jurisdiction or if complying with the laws of the applicable jurisdiction would cause the Plan or a Section 423 Offering to violate Section 423 of the Code. In the case of a Non-423 Offering, an Eligible Employee (or group of Eligible Employees) may be excluded from participation in the Plan or an Offering if the Committee has determined, in its sole

discretion, that participation of such Eligible Employee(s) is not advisable or practicable for any reason.

SECTION 5Employee Contributions.

(a)Frequency of Payroll Deductions. A Participant may purchase shares of Stock under the Plan by means of payroll deductions; provided, however, that if payroll deductions for purposes of the Plan are prohibited or otherwise problematic under applicable law (as determined by the Committee in its discretion), the Committee may require Participants to make contributions through such other means as determined by the Committee (including but not limited to payment by cash or check) on or prior to one or more Purchase Dates during the Offering; provided, further, that to the extent provided in the terms and conditions of an Offering, a Participant may also use loan proceeds from the Cashless Participation Program to purchase shares of Stock. Payroll deductions, subject to the provisions of Subsection (b) below or as otherwise provided by the Committee, shall occur on each payday during participation in the Plan.

(b)Amount of Payroll Deductions. An Eligible Employee shall designate on the enrollment form the portion of his or her Compensation that he or she elects to have withheld for the purchase of Stock. Such portion shall be a whole percentage of the Eligible Employee's Compensation, but not less than 1% nor more than 15% (or such lesser percentage as required by applicable law). However, no payroll deduction will be made unless a Participant timely files the proper form with the Company after a registration statement covering the Stock is filed and effective under the U.S. Securities Act of 1933, as amended.

(c)Changing Deduction Rate. A Participant may not increase the rate of payroll deductions during the Offering Period, but unless otherwise provided under the terms and conditions of an Offering, may decrease the rate of payroll deductions to a whole percentage of his or her Compensation that is not less than 1% in accordance with such procedures and subject to such limitations as the Company may establish for all Participants. A Participant may also increase or decrease the rate of payroll deductions effective for a new Offering Period by filing a new enrollment form with the Company at the prescribed location and time. The new deduction rate shall be a whole percentage of the Eligible Employee's Compensation, but not less than 1% nor more than 15%.

(d)Discontinuing Payroll Deductions. If a Participant wishes to discontinue employee contributions entirely, he or she may do so by withdrawing from the Plan pursuant to Section 6(a). In addition, employee contributions may be discontinued automatically pursuant to Section 9(b).

(e)Cashless Participation Program. Unless otherwise specified by the Committee with respect to an Offering, Eligible Employees (other than employees subject to the disclosure requirements of Section 16(a) of the U.S. Securities Exchange Act of 1934, as amended) may become a participant in the Cashless Participation Program by completing and submitting to the Cashless Participation Program Provider agreements and/or contracts (the "*Cashless Participation Program Documents*") in the forms and by the deadlines prescribed by the Company. The Cashless Participation Program Documents will contain terms and conditions of

the Eligible Employee's participation in the Cashless Participation Program, including, without limitation, the level of participation, sale price, loan terms, interest and repayment provisions. The aggregate outstanding principal amount of any loan to a Participant under the Cashless Participation Program will be equal to the difference between the Participant's selected payroll contribution rate pursuant to Section 5 and the maximum allowable under the Plan for such Offering Period pursuant to Section 5. The Cashless Participation Program loan may be repaid through the sale of a portion of the shares acquired under the Plan. Participation in the Cashless Participation Program may require the opening of a brokerage account (the "*Cashless Participation Program Brokerage Account*") separate from the brokerage account required to participate in Plan; and the Cashless Participation Program loan may be extended and repaid through the Cashless Participation Brokerage Account.

SECTION 6Withdrawal from the Plan.

(a)Withdrawal. A Participant may elect to withdraw from the Plan by filing the prescribed form with the Company at the prescribed location. Such withdrawal may be elected at any time before the last day of an Offering Period, except as otherwise provided in the Offering. In addition, if payment by cash or check is permitted under the terms and conditions of an Offering, Participants may be deemed to withdraw from the Plan by declining or failing to remit timely payment to the Company for the shares of Stock. As soon as reasonably practicable thereafter, payroll deductions shall cease and the entire amount credited to the Participant's Plan Account shall be refunded to him or her in cash, without interest, except as may be required by applicable law. No partial withdrawals shall be permitted.

(b)Re-enrollment After Withdrawal. A former Participant who has withdrawn from the Plan shall not be a Participant until he or she re-enrolls in the Plan under Section 4(b). Reenrollment may be effective only at the commencement of an Offering Period.

SECTION 7Change in Employment Status.

(a)Termination of Employment. Termination of employment as an Eligible Employee for any reason, including death or long-term disability, shall be treated as an automatic withdrawal from the Plan under Section 6(a). A transfer from one Participating Company to another shall not be treated as a termination of employment.

(b)Leave of Absence. For purposes of the Plan, employment shall not be deemed to terminate when the Participant goes on a paid leave or during the first three months of an unpaid leave, if the leave was approved by the Company in writing. Where the period of an unpaid leave exceeds three months, employment shall be deemed to terminate three months after the Participant goes on the unpaid leave, unless applicable law guarantees his or her right to return to work or the Participant's participation in the Plan is otherwise protected by applicable law. Employment shall be deemed to terminate in any event when the approved leave ends, unless the Participant immediately returns to work.

(c)Death. In the event of the Participant's death, the amount credited to his or her Plan Account shall be paid to the Participant's estate.

(d)Disability. Notwithstanding the foregoing, if a Participant with a disability begins receiving long-term disability benefits, the amount credited to his or her Plan Account shall be paid to the Participant.

SECTION 8Plan Accounts and Purchase of Shares.

(a)Plan Accounts. The Company shall maintain a Plan Account on its books in the name of each Participant. Whenever an amount is deducted from the Participant's Compensation under the Plan, such amount shall be credited to the Participant's Plan Account. Amounts credited to Plan Accounts (including any loan proceeds from the Cashless Participation Program) shall not be trust funds and may be commingled with the Company's general assets and applied to general corporate purposes, except where applicable law requires that amounts credited to Plan Accounts be held separately or deposited with a third party. No interest shall be credited to Plan Accounts, except as may be required by applicable law.

(b)Purchase Price. The Purchase Price for each share of Stock purchased during an Offering Period shall not be less than the lesser of:

(i)85% of the Fair Market Value of such share on the Purchase Date; or

(ii)85% of the Fair Market Value of such share on the Offering Date.

(c)Number of Shares Purchased. As of each Purchase Date, each Participant shall be deemed to have elected to purchase the number of shares of Stock calculated in accordance with this Subsection (c), unless the Participant has previously elected to withdraw from the Plan in accordance with Section 6(a). The amount then in the Participant's Plan Account shall be divided by the Purchase Price, and the number of shares that results shall be purchased from the Company with the funds in the Participant's Plan Account. The foregoing notwithstanding, no Participant shall purchase more than such number of shares of Stock as may be determined by the Committee with respect to the Offering Period, or Purchase Period, if applicable, nor more than the amounts of Stock set forth in Sections 9(b) and 14(a). For each Offering Period and, if applicable, Purchase Period, the Committee shall have the authority to establish additional limits on the number of shares purchasable by all Participants in the aggregate.

(d)Available Shares Insufficient. In the event that the aggregate number of shares that all Participants elect to purchase during an Offering Period exceeds the maximum number of shares remaining available for issuance under Section 14(a), or which may be purchased pursuant to any additional aggregate limits imposed by the Committee, then the number of shares to which each Participant is entitled shall be determined by multiplying the number of shares available for issuance by a fraction, the numerator of which is the number of shares that such Participant has elected to purchase and the denominator of which is the number of shares that all Participants have elected to purchase.

(e)Issuance of Stock. Certificates representing the shares of Stock purchased by a Participant under the Plan shall be issued to him or her as soon as reasonably practicable after the applicable Purchase Date, except that the Committee may determine that such shares shall be held for each Participant's benefit by a broker designated by the Committee (unless the Participant has elected that certificates be issued to him or her). Shares may be registered in the

name of the Participant or jointly in the name of the Participant and his or her spouse as joint tenants with right of survivorship or as community property.

(f)Unused Cash Balances. An amount remaining in the Participant's Plan Account that represents the Purchase Price for any fractional share or any amount remaining in the Participant's Plan Account that represents the Purchase Price for whole shares that could not be purchased by reason of Subsection (c) or (d) above, Section 9(b) or Section 14(a) shall be refunded to the Participant in cash, without interest (except as may be required by applicable law).

(g)Stockholder Approval. The Plan shall be submitted to the stockholders of the Company for their approval within twelve (12) months after the date the Plan is adopted by the Board. Any other provision of the Plan notwithstanding, no shares of Stock shall be purchased under the Plan unless and until the Company's stockholders have approved the adoption of the Plan.

(h)Taxes. At the time a Participant's purchase right is exercised, in whole or in part, or at the time a Participant disposes of some or all of the shares of Stock acquired under the Plan, the Participant will make adequate provision for any income tax, social insurance, payroll tax, fringe benefits tax, payment on account or other tax-related items arising in relation to the Participant's participation in the Plan ("*Tax-Related Items*"). In their sole discretion, and except as otherwise determined by the Committee, the Company or the Participating Company that employs the Participant may satisfy their obligations to withhold Tax-Related Items by (i) withholding from the Participant's wages or other compensation, (ii) withholding a sufficient whole number of shares of Stock otherwise issuable following purchase (and after the delivery to the Cashless Participation Program Provider or its designee of any shares of Stock required for repayment by the Participant of any Cashless Participation Program loan) having an aggregate Fair Market Value sufficient to pay the Tax-Related Items required to be withheld with respect to the Shares, or (iii) withholding from proceeds from the sale of shares of Stock issued upon purchase, either through a voluntary sale or a mandatory sale arranged by the Company. The Company shall not be required to issue any shares of Stock under the Plan until such obligations are satisfied.

SECTION 9Limitations On Stock Ownership.

(a)Five Percent Limit. Any other provision of the Plan notwithstanding, no Participant shall be granted a right to purchase Stock under the Plan if such Participant, immediately after his or her election to purchase such Stock, would own stock possessing 5% or more of the total combined voting power or value of all classes of stock of the Company or any parent or Subsidiary of the Company. For purposes of this Subsection (a), the following rules shall apply:

(i)Ownership of stock shall be determined after applying the attribution rules of section 424(d) of the Code;

(ii)Each Participant shall be deemed to own any stock that he or she has a right or option to purchase under this or any other plan; and

(iii)Each Participant shall be deemed to have the right to purchase up to the maximum number of shares of Stock that may be purchased by a Participant under this Plan under the individual limit specified pursuant to Section 8(c) with respect to each Offering Period.

(b)Dollar Limit. Any other provision of the Plan notwithstanding, no Participant shall accrue the right to purchase Stock at a rate which exceeds $25,000 of Fair Market Value of such Stock per calendar year (under this Plan and all other employee stock purchase plans of the Company or any parent or Subsidiary of the Company), determined in accordance with the provisions of Section 423(b)(8) of the Code and applicable Treasury Regulations promulgated thereunder.

For purposes of this Subsection (b), the Fair Market Value of Stock shall be determined as of the beginning of the Offering Period in which such Stock is purchased. Employee stock purchase plans not described in Section 423 of the Code shall be disregarded. If a Participant is precluded by this Subsection (b) from purchasing additional Stock under the Plan, then his or her employee contributions shall automatically be discontinued and shall resume at the beginning of the earliest Offering Period ending in the next calendar year (if he or she then is an Eligible Employee).

SECTION 10Rights Not Transferable.

The rights of any Participant under the Plan, or any Participant's interest in any Stock or moneys to which he or she may be entitled under the Plan, shall not be transferable by voluntary or involuntary assignment or by operation of law, or in any other manner other than by the laws of descent and distribution. If a Participant in any manner attempts to transfer, assign or otherwise encumber his or her rights or interest under the Plan, other than by the laws of descent and distribution, then such act shall be treated as an election by the Participant to withdraw from the Plan under Section 6(a). For the avoidance of doubt, participation in the Cashless Participation Program, including without limitation, the delivery to the Cashless Participation Program Provider or its designee of any shares of Stock required for the repayment by the Participant of any Cashless Participation Program loan, will not be deemed to violate this Section 10.

SECTION 11No Rights as An Employee.

Nothing in the Plan or in any right granted under the Plan shall confer upon the Participant any right to continue in the employ of a Participating Company for any period of specific duration or interfere with or otherwise restrict in any way the rights of the Participating Companies or of the Participant, which rights are hereby expressly reserved by each, to terminate his or her employment at any time and for any reason, with or without cause.

SECTION 12No Rights as A Stockholder.

A Participant shall have no rights as a stockholder with respect to any shares of Stock that he or she may have a right to purchase under the Plan until such shares have been purchased on the applicable Purchase Date.

SECTION 13Securities Law Requirements.

Shares of Stock shall not be issued under the Plan unless the issuance and delivery of such shares comply with (or are exempt from) all applicable requirements of law, including (without limitation) the U.S. Securities Act of 1933, as amended, the rules and regulations promulgated thereunder, state or non-U.S. securities laws and regulations, and the regulations of any stock exchange or other securities market on which the Company's securities may then be traded.

SECTION 14Stock Offered Under the Plan.

(a)Authorized Shares. The maximum aggregate number of shares of Stock available for purchase under the Plan is 1,950,000 shares[1], effective as of the Effective Date, plus an annual increase to be added on the first day of each of the Company's fiscal years, beginning with the fiscal year that begins January 1, 2016, equal to the least of (i) one percent (1%) of the outstanding shares of Stock on such date or (ii) a lesser amount determined by the Board; provided, however, that no annual increase shall be added more than ten years after the Effective Date of the Plan. The aggregate number of shares available for purchase under the Plan shall at all times be subject to adjustment pursuant to Section 14.

(b)Antidilution Adjustments. The aggregate number of shares of Stock offered under the Plan, the individual and aggregate Participant share limitations described in Section 8(c) and the price of shares that any Participant has elected to purchase shall be adjusted proportionately by the Committee in the event of any change in the number of issued shares of Stock (or issuance of shares other than Common Stock) by reason of any forward or reverse share split, subdivision or consolidation, or share dividend or bonus issue, recapitalization, reclassification, merger, amalgamation, consolidation, split-up, spin-off, reorganization, combination, exchange of shares of Stock, the issuance of warrants or other rights to purchase shares of Stock or other securities, or any other change in corporate structure or in the event of any extraordinary distribution (whether in the form of cash, shares of Stock, other securities or other property).

(c)Reorganizations. Any other provision of the Plan notwithstanding, immediately prior to the effective time of a Corporate Reorganization, the Offering Period then in progress shall terminate and shares shall be purchased pursuant to Section 8, unless the Plan is assumed by the surviving corporation or its parent corporation pursuant to the plan of merger or consolidation. The Plan shall in no event be construed to restrict in any way the Company's right to undertake a dissolution, liquidation, merger, consolidation or other reorganization.

SECTION 15Amendment or Discontinuance.

The Board (or any committee thereof to which it delegates such authority) shall have the right to amend, suspend or terminate the Plan at any time and without notice. Upon any such amendment, suspension or termination of the Plan during an Offering Period, the Board (or any committee thereof to which it delegates such authority) may in its discretion determine that the applicable Offering shall immediately terminate and that all amounts in the Participant Accounts

[1] This number does not reflect the 6-for-1 reverse stock split that occurred prior to the consummation of the Company's initial public offering.

shall be carried forward into a payroll deduction account for each Participant under a successor plan, if any, or promptly refunded to each Participant. Except as provided in Section 14, any increase in the aggregate number of shares of Stock to be issued under the Plan shall be subject to approval by a vote of the stockholders of the Company. In addition, any other amendment of the Plan shall be subject to approval by a vote of the stockholders of the Company to the extent required by an applicable law or regulation. This Plan shall continue until the earlier to occur of (a) termination of this Plan pursuant to this Section 15 or (b) issuance of all of the shares of Stock reserved for issuance under this Plan.

SECTION 16Execution.

To record the adoption of the Plan by the Board, the Company has caused its authorized officer to execute the same.

INVITAE CORPORATION

By /s/ Thomas Brida
Name : Thomas Brida
Title: General Counsel and Secretary

Exhibit 10.3

INVITAE CORPORATION

2015 STOCK INCENTIVE PLAN

(As Amended and Restated by the Board of Directors on August 31, 2021)

Table of Contents

INVITAE CORPORATION

2015 STOCK INCENTIVE PLAN

SECTION 1.ESTABLISHMENT AND PURPOSE.

The Plan was adopted by the Board of Directors on January 8, 2015 and became effective immediately prior to the closing of the initial offering of Stock to the public pursuant to a registration statement filed by the Company with the Securities and Exchange Commission (the "Effective Date"), was amended and restated on June 11, 2019, and was further amended and restated on March 6, 2020, June 12, 2020, December 7, 2020, March 26, 2021, July 16, 2021 and August 31, 2021. The purpose of the Plan is to promote the long-term success of the Company and the creation of stockholder value by (a) encouraging Employees, Outside Directors and Consultants to focus on critical long-range objectives, (b) encouraging the attraction and retention of Employees, Outside Directors and Consultants with exceptional qualifications and (c) linking Employees, Outside Directors and Consultants directly to stockholder interests through increased stock ownership. The Plan seeks to achieve this purpose by providing for Awards in the form of restricted shares, stock units, options (which may constitute incentive stock options or nonstatutory stock options), stock appreciation rights or cash-based awards.

SECTION 2.DEFINITIONS.

(a) *"Affiliate"* shall mean any entity other than a Subsidiary, if the Company and/or one or more Subsidiaries own not less than 50% of such entity.

(b) *"Award"* shall mean any award of an Option, a SAR, a Restricted Share or a Stock Unit or a Cash-Based Award under the Plan.

(c) *"Award Agreement"* shall mean the agreement between the Company and the recipient of an Award which contains the terms, conditions and restrictions pertaining to such Award.

(d) *"Board of Directors" or "Board"* shall mean the Board of Directors of the Company, as constituted from time to time.

(e) *"Cash-Based Award"* shall mean an Award that entitles the Participant to receive a cash-denominated payment.

(f) *"Change in Control"* shall mean the occurrence of any of the following events:

(i)A change in the composition of the Board of Directors occurs, as a result of which fewer than one-half of the incumbent directors are directors who either:

(A)Had been directors of the Company on the "look-back date" (as defined below) (the "original directors"); or

(B)Were elected, or nominated for election, to the Board of Directors with the affirmative votes of at least a majority of the aggregate of the original directors who were still in office at the time of the election or nomination and the directors whose election or nomination was previously so approved (the "continuing directors");

provided, however, that for this purpose, the "original directors" and "continuing directors" shall not include any individual whose initial assumption of office occurred as a result of an actual or threatened election contest with respect to the election or removal of directors or other actual or threatened solicitation of proxies or consents, by or on behalf of a person other than the Board; or

(ii)Any "person" (as defined below) who by the acquisition or aggregation of securities, is or becomes the "beneficial owner" (as defined in Rule 13d-3 under the Exchange Act), directly or indirectly, of securities of the Company representing 50% or more of the combined voting power of the Company's then outstanding securities ordinarily (and apart from rights accruing under special circumstances) having the right to vote at elections of directors (the "Base Capital Stock"); except that any change in the relative beneficial ownership of the Company's securities by any person resulting solely from a reduction in the aggregate number of outstanding shares of Base Capital Stock, and any decrease thereafter in such person's ownership of securities, shall be disregarded until such person increases in any manner, directly or indirectly, such person's beneficial ownership of any securities of the Company; or

(iii)The consummation of a merger or consolidation of the Company or a Subsidiary of the Company with or into another entity or any other corporate reorganization, if persons who were not stockholders of the Company immediately prior to such merger, consolidation or other reorganization own immediately after such merger, consolidation or other reorganization 50% or more of the voting power of the outstanding securities of each of (A) the Company (or its successor) and (B) any direct or indirect parent corporation of the Company (or its successor); or

(iv)The sale, transfer or other disposition of all or substantially all of the Company's assets.

For purposes of subsection (e)(i) above, the term "look-back" date shall mean the later of (1) the Effective Date or (2) the date 24 months prior to the date of the event that may constitute a Change in Control.

For purposes of subsection (e)(ii)) above, the term "person" shall have the same meaning as when used in Sections 13(d) and 14(d) of the Exchange Act but shall exclude (1) a trustee or other fiduciary holding securities under an employee benefit plan maintained by the Company or

a Parent or Subsidiary and (2) a corporation owned directly or indirectly by the stockholders of the Company in substantially the same proportions as their ownership of the Stock.

Any other provision of this Section 2(e) notwithstanding, a transaction shall not constitute a Change in Control if its sole purpose is to change the state of the Company's incorporation or to create a holding company that will be owned in substantially the same proportions by the persons who held the Company's securities immediately before such transaction, and a Change in Control shall not be deemed to occur if the Company files a registration statement with the United States Securities and Exchange Commission for the initial or secondary public offering of securities or debt of the Company to the public.

(g) *"Code"* shall mean the Internal Revenue Code of 1986, as amended.

(h) *"Committee"* shall mean the Compensation Committee as designated by the Board of Directors, which is authorized to administer the Plan, as described in Section 3 hereof.

(i) *"Company"* shall mean Invitae Corporation, a Delaware corporation.

(j) *"Consultant"* shall mean a consultant or advisor who provides bona fide services to the Company, a Parent, a Subsidiary or an Affiliate as an independent contractor (not including service as a member of the Board of Directors) or a member of the board of directors of a Parent or a Subsidiary, in each case who is not an Employee.

(k) *"Employee"* shall mean any individual who is a common-law employee of the Company, a Parent, a Subsidiary or an Affiliate.

(l) *"Exchange Act"* shall mean the Securities Exchange Act of 1934, as amended.

(m) *"Exercise Price"* shall mean, in the case of an Option, the amount for which one Share may be purchased upon exercise of such Option, as specified in the applicable Stock Option Agreement. "Exercise Price," in the case of a SAR, shall mean an amount, as specified in the applicable SAR Agreement, which is subtracted from the Fair Market Value of one Share in determining the amount payable upon exercise of such SAR.

(n) *"Fair Market Value"* with respect to a Share, shall mean the market price of one Share, determined by the Committee as follows:

(i)If the Stock was traded over-the-counter on the date in question, then the Fair Market Value shall be equal to the last transaction price quoted for such date by the OTC Bulletin Board or, if not so quoted, shall be equal to the mean between the last reported representative bid and asked prices quoted for such date by the principal automated inter-dealer quotation system on which the Stock is quoted or, if the Stock is not quoted on any such system, by the Pink Quote system;

(ii)If the Stock was traded on any established stock exchange (such as the New York Stock Exchange, The Nasdaq Global Market or The Nasdaq Global Select Market) or national market system on the date in question,

then the Fair Market Value shall be equal to the closing price reported for such date by the applicable exchange or system; and

(iii)If none of the foregoing provisions is applicable, then the Fair Market Value shall be determined by the Committee in good faith on such basis as it deems appropriate.

In all cases, the determination of Fair Market Value by the Committee shall be conclusive and binding on all persons.

(o) *"ISO"* shall mean an employee incentive stock option described in Section 422 of the Code.

(p) *"Nonstatutory Option" or "NSO"* shall mean an employee stock option that is not an ISO.

(q) *"Option"* shall mean an ISO or Nonstatutory Option granted under the Plan and entitling the holder to purchase Shares.

(r) *"Outside Director"* shall mean a member of the Board of Directors who is not a common-law employee of, or paid consultant to, the Company, a Parent or a Subsidiary.

(s) *"Parent"* shall mean any corporation (other than the Company) in an unbroken chain of corporations ending with the Company, if each of the corporations other than the Company owns stock possessing 50% or more of the total combined voting power of all classes of stock in one of the other corporations in such chain. A corporation that attains the status of a Parent on a date after the adoption of the Plan shall be a Parent commencing as of such date.

(t) *"Participant"* shall mean a person who holds an Award.

(u) *"Performance Based Award"* shall mean any Restricted Share Award, Stock Unit Award or Cash-Based Award granted to a Participant pursuant to the terms set forth in Section 20.

(v) *"Plan"* shall mean this 2015 Stock Incentive Plan of Invitae Corporation, as amended from time to time.

(w) *"Purchase Price"* shall mean the consideration for which one Share may be acquired under the Plan (other than upon exercise of an Option), as specified by the Committee.

(x) *"Restricted Share"* shall mean a Share awarded under the Plan.

(y) *"SAR"* shall mean a stock appreciation right granted under the Plan.

(z) *"Service"* shall mean service as an Employee, Consultant or Outside Director, subject to such further limitations as may be set forth in the Plan or the applicable Award Agreement. Service does not terminate when an Employee goes on a bona fide leave of absence, that was approved by the Company in writing, if the terms of the leave provide for continued

Service crediting, or when continued Service crediting is required by applicable law. However, for purposes of determining whether an Option is entitled to ISO status, an Employee's employment will be treated as terminating three months after such Employee went on leave, unless such Employee's right to return to active work is guaranteed by law or by a contract. Service terminates in any event when the approved leave ends, unless such Employee immediately returns to active work. The Company determines which leaves of absence count toward Service, and when Service terminates for all purposes under the Plan.

(aa) *"Share"* shall mean one share of Stock, as adjusted in accordance with Section 12 (if applicable).

(ab) *"Stock"* shall mean the Common Stock of the Company.

(ac) *"Stock Unit"* shall mean a bookkeeping entry representing the Company's obligation to deliver one Share (or distribute cash) on a future date in accordance with the provisions of a Stock Unit Award Agreement.

(ad) *"Subsidiary"* shall mean any corporation, if the Company and/or one or more other Subsidiaries own not less than 50% of the total combined voting power of all classes of outstanding stock of such corporation. A corporation that attains the status of a Subsidiary on a date after the adoption of the Plan shall be considered a Subsidiary commencing as of such date.

(ae) *"Total and Permanent Disability"* shall mean any permanent and total disability as defined by Section 22(e)(3) of the Code.

SECTION 3.ADMINISTRATION.

(a)*Committee Composition*. The Plan shall be administered by a Committee appointed by the Board, or by the Board acting as the Committee. The Committee shall consist of two or more directors of the Company. In addition, to the extent required by the Board, the composition of the Committee shall satisfy (i) such requirements as the Securities and Exchange Commission may establish for administrators acting under plans intended to qualify for exemption under Rule 16b-3 (or its successor) under the Exchange Act; and (ii) such requirements as the Internal Revenue Service may establish for outside directors acting under plans intended to qualify for exemption under Section 162(m)(4)(C) of the Code.

(b)*Committee for Non-Officer Grants*. The Board may also appoint one or more separate committees of the Board, each composed of one or more directors of the Company who need not satisfy the requirements of Section 3(a), who may administer the Plan with respect to Employees who are not considered officers or directors of the Company under Section 16 of the Exchange Act, may grant Awards under the Plan to such Employees and may determine all terms of such grants. Within the limitations of the preceding sentence, any reference in the Plan to the Committee shall include such committee or committees appointed pursuant to the preceding sentence. To the extent permitted by applicable laws, the Board of Directors may also authorize one or more officers of the Company to designate Employees, other than officers under Section 16 of the Exchange Act, to receive Awards and/or to determine the number of such Awards to be received by such persons; provided, however, that the Board of Directors shall specify the total number of Awards that such officers may so award.

(c)*Committee Procedures*. The Board of Directors shall designate one of the members of the Committee as chairman. The Committee may hold meetings at such times and places as it shall determine. The acts of a majority of the Committee members present at meetings at which a quorum exists, or acts reduced to or approved in writing (including via email) by all Committee members, shall be valid acts of the Committee.

(d)*Committee Responsibilities*. Subject to the provisions of the Plan, the Committee shall have full authority and discretion to take the following actions:

(i)To interpret the Plan and to apply its provisions;

(ii)To adopt, amend or rescind rules, procedures and forms relating to the Plan;

(iii)To adopt, amend or terminate sub-plans established for the purpose of satisfying applicable foreign laws including qualifying for preferred tax treatment under applicable foreign tax laws;

(iv)To authorize any person to execute, on behalf of the Company, any instrument required to carry out the purposes of the Plan;

(v)To determine when Awards are to be granted under the Plan;

(vi)To select the Participants to whom Awards are to be granted;

(vii)To determine the type of Award and number of Shares or amount of cash to be made subject to each Award;

(viii)To prescribe the terms and conditions of each Award, including (without limitation) the Exercise Price and Purchase Price, and the vesting or duration of the Award (including accelerating the vesting of Awards, either at the time of the Award or thereafter, without the consent of the Participant), to determine whether an Option is to be classified as an ISO or as a Nonstatutory Option, and to specify the provisions of the agreement relating to such Award;

(ix)To amend any outstanding Award Agreement, subject to applicable legal restrictions and to the consent of the Participant if the Participant's rights or obligations would be materially impaired;

(x)To prescribe the consideration for the grant of each Award or other right under the Plan and to determine the sufficiency of such consideration;

(xi)To determine the disposition of each Award or other right under the Plan in the event of a Participant's divorce or dissolution of marriage;

(xii)To determine whether Awards under the Plan will be granted in replacement of other grants under an incentive or other compensation plan of an acquired business;

(xiii)To correct any defect, supply any omission, or reconcile any inconsistency in the Plan or any Award Agreement;

(xiv)To establish or verify the extent of satisfaction of any performance goals or other conditions applicable to the grant, issuance, exercisability, vesting and/or ability to retain any Award; and

(xv)To take any other actions deemed necessary or advisable for the administration of the Plan.

Subject to the requirements of applicable law, the Committee may designate persons other than members of the Committee to carry out its responsibilities and may prescribe such conditions and limitations as it may deem appropriate, except that the Committee may not delegate its authority with regard to the selection for participation of or the granting of Awards under the Plan to persons subject to Section 16 of the Exchange Act. All decisions, interpretations and other actions of the Committee shall be final and binding on all Participants and all persons deriving their rights from a Participant. No member of the Committee shall be liable for any action that he has taken or has failed to take in good faith with respect to the Plan or any Award under the Plan.

SECTION 4.ELIGIBILITY.

(a)*General Rule*. Only Employees, Consultants and Outside Directors shall be eligible for the grant of Awards. Only common-law employees of the Company, a Parent or a Subsidiary shall be eligible for the grant of ISOs.

(b)*Ten-Percent Stockholders*. An Employee who owns more than 10% of the total combined voting power of all classes of outstanding stock of the Company, a Parent or Subsidiary shall not be eligible for the grant of an ISO unless such grant satisfies the requirements of Section 422(c)(5) of the Code.

(c)*Attribution Rules*. For purposes of Section 4(c) above, in determining stock ownership, an Employee shall be deemed to own the stock owned, directly or indirectly, by or for such Employee's brothers, sisters, spouse, ancestors and lineal descendants. Stock owned, directly or indirectly, by or for a corporation, partnership, estate or trust shall be deemed to be owned proportionately by or for its stockholders, partners or beneficiaries.

(d)*Outstanding Stock*. For purposes of Section 4(c) above, "outstanding stock" shall include all stock actually issued and outstanding immediately after the grant. "Outstanding stock" shall not include shares authorized for issuance under outstanding options held by the Employee or by any other person.

SECTION 5.STOCK SUBJECT TO PLAN.

(a)*Basic Limitation*. Shares offered under the Plan shall be authorized but unissued Shares or treasury Shares. The aggregate number of Shares authorized for issuance as Awards under the Plan (other than Inducement Awards as set forth in Section 15) shall not exceed the sum of (x) 4,250,000 Shares, plus (y) the sum of the number of Shares subject to outstanding awards under the Company's 2010 Stock Plan (the "*Predecessor Plan*") on the Effective Date that are subsequently forfeited or terminated for any reason before being exercised or settled, plus the number of Shares subject to vesting restrictions under the Predecessor Plan on the Effective Date that are subsequently forfeited, plus the number of reserved Shares not issued or subject to outstanding grants under the Predecessor Plan on the Effective Date, plus (z) an annual increase on the first day of each fiscal year, for a period of not more than ten years, beginning on January 1, 2016, and ending on (and including) January 1, 2025, in an amount equal to the lesser of (i) four percent (4%) of the outstanding Shares on the last day of the immediately preceding fiscal or (ii) if the Board acts prior to the first day of the fiscal year, such lesser amount (including zero) that the Board determines for purposes of the annual increase for that fiscal year. Notwithstanding the foregoing: (A) the number of Shares that may be delivered in the aggregate pursuant to the exercise of ISOs granted under the Plan shall not exceed 16,833,333 Shares plus, to the extent allowable under Section 422 of the Code and the Treasury Regulations promulgated thereunder, any Shares that become available for issuance under the Plan pursuant to Section 5(c); and (B) an additional 543,872 Shares are authorized for issuance as Awards under the Plan as a result of the Company's assumption of the 2015 ArcherDX, Inc. Stock Incentive Plan, provided such Awards may not be issued (I) to persons who were Employees, Consultants or Outside Directors of the Company or its Subsidiaries prior to October 2, 2020 (*i.e.*, the date of the Company's acquisition of ArcherDX, Inc.) or (II) following September 2, 2025 (*i.e.*, the end of the original term of the 2015 ArcherDX, Inc. Stock Incentive Plan). The limitations of this Section 5(a) shall be subject to adjustment pursuant to Section 12. The number of Shares that are subject to Awards outstanding at any time under the Plan shall not exceed the number of Shares which then remain available for issuance under the Plan. The Company shall at all times reserve and keep available sufficient Shares to satisfy the requirements of the Plan.

(b)*Award Limitation*. No Participant eligible for an Award may receive Options or SARs under the Plan, excluding Inducement Awards, in any calendar year that relate to an aggregate of more than 2,000,000 Shares, and no more than two times this amount in the first year of employment. In applying the foregoing limitation with respect to a Participant, if any Option or SAR is canceled, the canceled Option or SAR shall continue to count against the maximum number of Shares with respect to which Options and SARs may be granted to the Participant. For this purpose, the repricing of an Option or SAR shall be treated as the cancellation of the existing Option or SAR and the grant of a new Option or SAR.

(c)*Additional Shares*. If Restricted Shares or Shares issued upon the exercise of Options are forfeited, then such Shares shall again become available for Awards under the Plan. If Stock Units, Options or SARs are forfeited or terminate for any reason before being exercised or settled, or an Award is settled in cash without the delivery of Shares to the holder, then any Shares subject to the Award shall again become available for Awards under the Plan. Only the number of Shares (if any) actually issued in settlement of Awards (and not forfeited) shall reduce the number available in Section 5(a) and the balance shall again become available for Awards

under the Plan. Any Shares withheld to satisfy the grant or exercise price or tax withholding obligation pursuant to any Award shall again become available for Awards under the Plan. Notwithstanding the foregoing provisions of this Section 5(c), Shares that have actually been issued shall not again become available for Awards under the Plan, except for Shares that are forfeited and do not become vested.

(d)*Substitution and Assumption of Awards*. The Committee may make Awards under the Plan by assumption, substitution or replacement of stock options, stock appreciation rights, stock units or similar awards granted by another entity (including a Parent or Subsidiary), if such assumption, substitution or replacement is in connection with an asset acquisition, stock acquisition, merger, consolidation or similar transaction involving the Company (and/or its Parent or Subsidiary) and such other entity (and/or its affiliate). The terms of such assumed, substituted or replaced Awards shall be as the Committee, in its discretion, determines is appropriate. Any such substitute or assumed Awards shall not count against the Share limitation set forth in Section 5(a).

SECTION 6.RESTRICTED SHARES.

(a)*Restricted Share Award Agreement*. Each grant of Restricted Shares under the Plan shall be evidenced by a Restricted Share Award Agreement between the Participant and the Company. Such Restricted Shares shall be subject to all applicable terms of the Plan and may be subject to any other terms that are not inconsistent with the Plan. The provisions of the various Restricted Share Award Agreements entered into under the Plan need not be identical.

(b)*Payment for Awards*. Restricted Shares may be sold or awarded under the Plan for such consideration as the Committee may determine, including (without limitation) cash, cash equivalents, full-recourse promissory notes, past services and future services.

(c)*Vesting*. Each Award of Restricted Shares may or may not be subject to vesting. Vesting shall occur, in full or in installments, upon satisfaction of the conditions specified in the Restricted Share Award Agreement. A Restricted Share Award Agreement may provide for accelerated vesting in the event of the Participant's death, disability or retirement or other events. The Committee may determine, at the time of granting Restricted Shares or thereafter, that all or part of such Restricted Shares shall become vested in the event that a Change in Control occurs with respect to the Company.

(d)*Voting and Dividend Rights*. The holders of Restricted Shares awarded under the Plan shall have the same voting, dividend and other rights as the Company's other stockholders. A Restricted Share Award Agreement, however, may require that the holders of Restricted Shares invest any cash dividends received in additional Restricted Shares. Such additional Restricted Shares shall be subject to the same conditions and restrictions as the Award with respect to which the dividends were paid.

(e)*Restrictions on Transfer of Shares*. Restricted Shares shall be subject to such rights of repurchase, rights of first refusal or other restrictions as the Committee may determine. Such restrictions shall be set forth in the applicable Restricted Share Award Agreement and shall apply in addition to any general restrictions that may apply to all holders of Shares.

SECTION 7.TERMS AND CONDITIONS OF OPTIONS.

(a)*Stock Option Award Agreement*. Each grant of an Option under the Plan shall be evidenced by a Stock Option Award Agreement between the Participant and the Company. Such Option shall be subject to all applicable terms and conditions of the Plan and may be subject to any other terms and conditions which are not inconsistent with the Plan and which the Committee deems appropriate for inclusion in a Stock Option Award Agreement. The Stock Option Award Agreement shall specify whether the Option is an ISO or an NSO. The provisions of the various Stock Option Award Agreements entered into under the Plan need not be identical.

(b)*Number of Shares*. Each Stock Option Award Agreement shall specify the number of Shares that are subject to the Option and shall provide for the adjustment of such number in accordance with Section 12.

(c)*Exercise Price*. Each Stock Option Award Agreement shall specify the Exercise Price. The Exercise Price of an ISO shall not be less than 100% of the Fair Market Value of a Share on the date of grant, except as otherwise provided in 4(c), and the Exercise Price of an NSO shall not be less 100% of the Fair Market Value of a Share on the date of grant. Notwithstanding the foregoing, Options may be granted with an Exercise Price of less than 100% of the Fair Market Value per Share on the date of grant pursuant to a transaction described in, and in a manner consistent with, Section 424(a) of the Code. Subject to the foregoing in this Section 7(c), the Exercise Price under any Option shall be determined by the Committee in its sole discretion. The Exercise Price shall be payable in one of the forms described in Section 8.

(d)*Withholding Taxes*. As a condition to the exercise of an Option, the Participant shall make such arrangements as the Committee may require for the satisfaction of any federal, state, local or foreign withholding tax obligations that may arise in connection with such exercise. The Participant shall also make such arrangements as the Committee may require for the satisfaction of any federal, state, local or foreign withholding tax obligations that may arise in connection with the disposition of Shares acquired by exercising an Option.

(e)*Exercisability and Term*. Each Stock Option Award Agreement shall specify the date when all or any installment of the Option is to become exercisable. The Stock Option Award Agreement shall also specify the term of the Option; provided that the term of an ISO shall in no event exceed 10 years from the date of grant (five years for ISOs granted to Employees described in Section 4(c)). A Stock Option Award Agreement may provide for accelerated exercisability in the event of the Participant's death, disability, or retirement or other events and may provide for expiration prior to the end of its term in the event of the termination of the Participant's Service. Options may be awarded in combination with SARs, and such an Award may provide that the Options will not be exercisable unless the related SARs are forfeited. Subject to the foregoing in this Section 7(e), the Committee at its sole discretion shall determine when all or any installment of an Option is to become exercisable and when an Option is to expire.

(f)*Exercise of Options*. Each Stock Option Award Agreement shall set forth the extent to which the Participant shall have the right to exercise the Option following termination of the Participant's Service with the Company and its Subsidiaries, and the right to exercise the

Option of any executors or administrators of the Participant's estate or any person who has acquired such Option(s) directly from the Participant by bequest or inheritance. Such provisions shall be determined in the sole discretion of the Committee, need not be uniform among all Options issued pursuant to the Plan, and may reflect distinctions based on the reasons for termination of Service.

(g)*Effect of Change in Control*. The Committee may determine, at the time of granting an Option or thereafter, that such Option shall become exercisable as to all or part of the Shares subject to such Option in the event that a Change in Control occurs with respect to the Company.

(h)*No Rights as a Stockholder*. A Participant shall have no rights as a stockholder with respect to any Shares covered by his Option until the date of the issuance of a stock certificate for such Shares. No adjustments shall be made, except as provided in Section 12.

(i)*Modification, Extension and Renewal of Options*. Within the limitations of the Plan, the Committee may modify, extend or renew outstanding options or may accept the cancellation of outstanding options (to the extent not previously exercised), whether or not granted hereunder, in return for the grant of new Options for the same or a different number of Shares and at the same or a different Exercise Price, or in return for the grant of a different Award for the same or a different number of Shares, without stockholder approval. The foregoing notwithstanding, no modification of an Option shall, without the consent of the Participant, materially impair his or her rights or obligations under such Option.

(j)*Restrictions on Transfer of Shares*. Any Shares issued upon exercise of an Option shall be subject to such special forfeiture conditions, rights of repurchase, rights of first refusal and other transfer restrictions as the Committee may determine. Such restrictions shall be set forth in the applicable Stock Option Award Agreement and shall apply in addition to any general restrictions that may apply to all holders of Shares.

(k)*Buyout Provisions*. The Committee may at any time (a) offer to buy out for a payment in cash or cash equivalents an Option previously granted or (b) authorize a Participant to elect to cash out an Option previously granted, in either case at such time and based upon such terms and conditions as the Committee shall establish.

SECTION 8.PAYMENT FOR SHARES.

(a)*General Rule*. The entire Exercise Price or Purchase Price of Shares issued under the Plan shall be payable in lawful money of the United States of America at the time when such Shares are purchased, except as provided in Section 8(b) through Section 8(h) below.

(b)*Surrender of Stock*. To the extent that a Stock Option Award Agreement so provides, payment may be made all or in part by surrendering, or attesting to the ownership of, Shares which have already been owned by the Participant or his representative. Such Shares shall be valued at their Fair Market Value on the date when the new Shares are purchased under the Plan. The Participant shall not surrender, or attest to the ownership of, Shares in payment of the Exercise Price if such action would cause the Company to recognize compensation expense (or additional compensation expense) with respect to the Option for financial reporting purposes.

(c)*Services Rendered*. At the discretion of the Committee, Shares may be awarded under the Plan in consideration of services rendered to the Company or a Subsidiary. If Shares are awarded without the payment of a Purchase Price in cash, the Committee shall make a determination (at the time of the Award) of the value of the services rendered by the Participant and the sufficiency of the consideration to meet the requirements of Section 6(b).

(d)*Cashless Exercise*. To the extent that a Stock Option Award Agreement so provides, payment may be made all or in part by delivery (on a form prescribed by the Committee) of an irrevocable direction to a securities broker to sell Shares and to deliver all or part of the sale proceeds to the Company in payment of the aggregate Exercise Price.

(e)*Exercise/Pledge*. To the extent that a Stock Option Award Agreement so provides, payment may be made all or in part by delivery (on a form prescribed by the Committee) of an irrevocable direction to a securities broker or lender to pledge Shares, as security for a loan, and to deliver all or part of the loan proceeds to the Company in payment of the aggregate Exercise Price.

(f)*Net Exercise*. To the extent that a Stock Option Award Agreement so provides, by a "net exercise" arrangement pursuant to which the number of Shares issuable upon exercise of the Option shall be reduced by the largest whole number of Shares having an aggregate Fair Market Value that does not exceed the aggregate exercise price (plus tax withholdings, if applicable) and any remaining balance of the aggregate exercise price (and/or applicable tax withholdings) not satisfied by such reduction in the number of whole Shares to be issued shall be paid by the Optionee in cash other form of payment permitted under the Stock Option Agreement.

(g)*Promissory Note*. To the extent that a Stock Option Award Agreement or Restricted Share Award Agreement so provides, payment may be made all or in part by delivering (on a form prescribed by the Company) a full-recourse promissory note.

(h)*Other Forms of Payment*. To the extent that a Stock Option Award Agreement or Restricted Share Award Agreement so provides, payment may be made in any other form that is consistent with applicable laws, regulations and rules.

(i)*Limitations under Applicable Law*. Notwithstanding anything herein or in a Stock Option Award Agreement or Restricted Share Award Agreement to the contrary, payment may not be made in any form that is unlawful, as determined by the Committee in its sole discretion.

SECTION 9.STOCK APPRECIATION RIGHTS.

(a)*SAR Award Agreement*. Each grant of a SAR under the Plan shall be evidenced by a SAR Award Agreement between the Participant and the Company. Such SAR shall be subject to all applicable terms of the Plan and may be subject to any other terms that are not inconsistent with the Plan. The provisions of the various SAR Award Agreements entered into under the Plan need not be identical.

(b)*Number of Shares*. Each SAR Award Agreement shall specify the number of Shares to which the SAR pertains and shall provide for the adjustment of such number in accordance with Section 12.

(c)*Exercise Price*. Each SAR Award Agreement shall specify the Exercise Price. The Exercise Price of a SAR shall not be less than 100% of the Fair Market Value of a Share on the date of grant. Notwithstanding the foregoing, SARs may be granted with an Exercise Price of less than 100% of the Fair Market Value per Share on the date of grant pursuant to a transaction described in, and in a manner consistent with, Section 424(a) of the Code. Subject to the foregoing in this Section 9(c), the Exercise Price under any SAR shall be determined by the Committee in its sole discretion.

(d)*Exercisability and Term*. Each SAR Award Agreement shall specify the date when all or any installment of the SAR is to become exercisable. The SAR Award Agreement shall also specify the term of the SAR. A SAR Award Agreement may provide for accelerated exercisability in the event of the Participant's death, disability or retirement or other events and may provide for expiration prior to the end of its term in the event of the termination of the Participant's service. SARs may be awarded in combination with Options, and such an Award may provide that the SARs will not be exercisable unless the related Options are forfeited. A SAR may be included in an ISO only at the time of grant but may be included in an NSO at the time of grant or thereafter. A SAR granted under the Plan may provide that it will be exercisable only in the event of a Change in Control.

(e)*Effect of Change in Control*. The Committee may determine, at the time of granting a SAR or thereafter, that such SAR shall become fully exercisable as to all Common Shares subject to such SAR in the event that a Change in Control occurs with respect to the Company.

(f)*Exercise of SARs*. Upon exercise of a SAR, the Participant (or any person having the right to exercise the SAR after his or her death) shall receive from the Company (a) Shares, (b) cash or (c) a combination of Shares and cash, as the Committee shall determine. The amount of cash and/or the Fair Market Value of Shares received upon exercise of SARs shall, in the aggregate, be equal to the amount by which the Fair Market Value (on the date of surrender) of the Shares subject to the SARs exceeds the Exercise Price.

(g)*Modification or Assumption of SARs*. Within the limitations of the Plan, the Committee may modify, extend or assume outstanding SARs or may accept the cancellation of outstanding SARs (whether granted by the Company or by another issuer) in return for the grant of new SARs for the same or a different number of shares and at the same or a different exercise price, or in return for the grant of a different Award for the same or a different number of Shares, without stockholder approval. The foregoing notwithstanding, no modification of a SAR shall, without the consent of the holder, materially impair his or her rights or obligations under such SAR.

(h)*Buyout Provisions*. The Committee may at any time (a) offer to buy out for a payment in cash or cash equivalents a SAR previously granted, or (b) authorize a Participant to

elect to cash out a SAR previously granted, in either case at such time and based upon such terms and conditions as the Committee shall establish.

SECTION 10.STOCK UNITS.

(a)*Stock Unit Award Agreement*. Each grant of Stock Units under the Plan shall be evidenced by a Stock Unit Award Agreement between the Participant and the Company. Such Stock Units shall be subject to all applicable terms of the Plan and may be subject to any other terms that are not inconsistent with the Plan. The provisions of the various Stock Unit Award Agreements entered into under the Plan need not be identical.

(b)*Payment for Awards*. To the extent that an Award is granted in the form of Stock Units, no cash consideration shall be required of the Award recipients.

(c)*Vesting Conditions*. Each Award of Stock Units may or may not be subject to vesting. Vesting shall occur, in full or in installments, upon satisfaction of the conditions specified in the Stock Unit Award Agreement. A Stock Unit Award Agreement may provide for accelerated vesting in the event of the Participant's death, disability or retirement or other events. The Committee may determine, at the time of granting Stock Units or thereafter, that all or part of such Stock Units shall become vested in the event that a Change in Control occurs with respect to the Company.

(d)*Voting and Dividend Rights*. The holders of Stock Units shall have no voting rights. Prior to settlement or forfeiture, any Stock Unit awarded under the Plan may, at the Committee's discretion, carry with it a right to dividend equivalents. Such right entitles the holder to be credited with an amount equal to all cash dividends paid on one Share while the Stock Unit is outstanding. Dividend equivalents may be converted into additional Stock Units. Settlement of dividend equivalents may be made in the form of cash, in the form of Shares, or in a combination of both. Prior to distribution, any dividend equivalents which are not paid shall be subject to the same conditions and restrictions (including without limitation, any forfeiture conditions) as the Stock Units to which they attach.

(e)*Form and Time of Settlement of Stock Units*. Settlement of vested Stock Units may be made in the form of (a) cash, (b) Shares or (c) any combination of both, as determined by the Committee. The actual number of Stock Units eligible for settlement may be larger or smaller than the number included in the original Award, based on predetermined performance factors. Methods of converting Stock Units into cash may include (without limitation) a method based on the average Fair Market Value of Shares over a series of trading days. A Stock Unit Award Agreement may provide that vested Stock Units may be settled in a lump sum or in installments. A Stock Unit Award Agreement may provide that the distribution may occur or commence when all vesting conditions applicable to the Stock Units have been satisfied or have lapsed, or it may be deferred to any later date, subject to compliance with Section 409A of the Code. The amount of a deferred distribution may be increased by an interest factor or by dividend equivalents. Until an Award of Stock Units is settled, the number of such Stock Units shall be subject to adjustment pursuant to Section 12.

(f)*Death of Participant*. Any Stock Unit Award that becomes payable after the Participant's death shall be distributed to the Participant's beneficiary or beneficiaries. Each

recipient of a Stock Unit Award under the Plan shall designate one or more beneficiaries for this purpose by filing the prescribed form with the Company. A beneficiary designation may be changed by filing the prescribed form with the Company at any time before the Participant's death. If no beneficiary was designated or if no designated beneficiary survives the Participant, then any Stock Units Award that becomes payable after the Participant's death shall be distributed to the Participant's estate.

(g)*Creditors' Rights*. A holder of Stock Units shall have no rights other than those of a general creditor of the Company. Stock Units represent an unfunded and unsecured obligation of the Company, subject to the terms and conditions of the applicable Stock Unit Award Agreement.

SECTION 11.CASH-BASED AWARDS

The Committee may, in its sole discretion, grant Cash-Based Awards to any Participant in such number or amount and upon such terms, and subject to such conditions, as the Committee shall determine at the time of grant and specify in an applicable Award Agreement. The Committee shall determine the maximum duration of the Cash-Based Award, the amount of cash which may be payable pursuant to the Cash-Based Award, the conditions upon which the Cash-Based Award shall become vested or payable, and such other provisions as the Committee shall determine. Each Cash-Based Award shall specify a cash-denominated payment amount, formula or payment ranges as determined by the Committee. Payment, if any, with respect to a Cash-Based Award shall be made in accordance with the terms of the Award and may be made in cash or in shares of Stock, as the Committee determines.

SECTION 12.ADJUSTMENT OF SHARES.

(a)*Adjustments*. In the event of a subdivision of the outstanding Stock, a declaration of a dividend payable in Shares, a declaration of a dividend payable in a form other than Shares in an amount that has a material effect on the price of Shares, a combination or consolidation of the outstanding Stock (by reclassification or otherwise) into a lesser number of Shares, a recapitalization, a spin-off or a similar occurrence, the Committee shall make appropriate and equitable adjustments in:

(i)The number of Shares available for future Awards under Section 5;

(ii)The limitations set forth in Sections 5(a) and (b) and Section 19;

(iii)The number of Shares covered by each outstanding Award; and

(iv)The Exercise Price under each outstanding Option and SAR.

(b)*Dissolution or Liquidation*. To the extent not previously exercised or settled, Options, SARs and Stock Units shall terminate immediately prior to the dissolution or liquidation of the Company.

(c)*Reorganizations*. In the event that the Company is a party to a merger or other reorganization, outstanding Awards shall be subject to the agreement of merger or

reorganization. Subject to compliance with Section 409A of the Code, such agreement shall provide for:

(i)The continuation of the outstanding Awards by the Company, if the Company is a surviving corporation;

(ii)The assumption of the outstanding Awards by the surviving corporation or its parent or subsidiary;

(iii)The substitution by the surviving corporation or its parent or subsidiary of its own awards for the outstanding Awards;

(iv)Immediate vesting, exercisability and settlement of outstanding Awards followed by the cancellation of such Awards upon or immediately prior to the effectiveness of such transaction; or

(v)Settlement of the intrinsic value of the outstanding Awards (whether or not then vested or exercisable) in cash or cash equivalents or equity (including cash or equity subject to deferred vesting and delivery consistent with the vesting restrictions applicable to such Awards or the underlying Shares) followed by the cancellation of such Awards (and, for the avoidance of doubt, if as of the date of the occurrence of the transaction the Committee determines in good faith that no amount would have been attained upon the exercise of such Award or realization of the Participant's rights, then such Award may be terminated by the Company without payment); in each case without the Participant's consent. Any acceleration of payment of an amount that is subject to section 409A of the Code will be delayed, if necessary, until the earliest time that such payment would be permissible under Section 409A without triggering any additional taxes applicable under Section 409A.

The Company will have no obligation to treat all Awards, all Awards held by a Participant, or all Awards of the same type, similarly.

(d)*Reservation of Rights*. Except as provided in this Section 12, a Participant shall have no rights by reason of any subdivision or consolidation of shares of stock of any class, the payment of any dividend or any other increase or decrease in the number of shares of stock of any class. Any issue by the Company of shares of stock of any class, or securities convertible into shares of stock of any class, shall not affect, and no adjustment by reason thereof shall be made with respect to, the number or Exercise Price of Shares subject to an Award. The grant of an Award pursuant to the Plan shall not affect in any way the right or power of the Company to make adjustments, reclassifications, reorganizations or changes of its capital or business structure, to merge or consolidate or to dissolve, liquidate, sell or transfer all or any part of its business or assets. In the event of any change affecting the Shares or the Exercise Price of Shares subject to an Award, including a merger or other reorganization, for reasons of administrative convenience, the Company in its sole discretion may refuse to permit the exercise of any Award during a period of up to thirty (30) days prior to the occurrence of such event.

SECTION 13.DEFERRAL OF AWARDS.

(a)*Committee Powers*. Subject to compliance with Section 409A of the Code, the Committee (in its sole discretion) may permit or require a Participant to:

(i)Have cash that otherwise would be paid to such Participant as a result of the exercise of a SAR or the settlement of Stock Units credited to a deferred compensation account established for such Participant by the Committee as an entry on the Company's books;

(ii)Have Shares that otherwise would be delivered to such Participant as a result of the exercise of an Option or SAR converted into an equal number of Stock Units; or

(iii)Have Shares that otherwise would be delivered to such Participant as a result of the exercise of an Option or SAR or the settlement of Stock Units converted into amounts credited to a deferred compensation account established for such Participant by the Committee as an entry on the Company's books. Such amounts shall be determined by reference to the Fair Market Value of such Shares as of the date when they otherwise would have been delivered to such Participant.

(b)*General Rules*. A deferred compensation account established under this Section 13 may be credited with interest or other forms of investment return, as determined by the Committee. A Participant for whom such an account is established shall have no rights other than those of a general creditor of the Company. Such an account shall represent an unfunded and unsecured obligation of the Company and shall be subject to the terms and conditions of the applicable agreement between such Participant and the Company. If the deferral or conversion of Awards is permitted or required, the Committee (in its sole discretion) may establish rules, procedures and forms pertaining to such Awards, including (without limitation) the settlement of deferred compensation accounts established under this Section 13.

SECTION 14.AWARDS UNDER OTHER PLANS.

The Company may grant awards under other plans or programs. Such awards may be settled in the form of Shares issued under this Plan. Such Shares shall be treated for all purposes under the Plan like Shares issued in settlement of Stock Units and shall, when issued, reduce the number of Shares available under Section 5.

SECTION 15.INDUCEMENT AWARDS POOL.

(a)*Inducement Share Reserve*. An additional pool of Shares (the "*Inducement Shares*") are reserved under this Plan to be used exclusively for the grant of Awards in compliance with New York Stock Exchange Rule 303A.08 (the "*Inducement Awards*"). The pool of Inducement Shares shall not exceed in the aggregate (a) 595,000 Shares ("*Share-based Inducement Awards*"), plus (b) $341,225,000, with the specific number of Shares within such $341,225,000 limit based on (i) the Fair Market Value of a Share on the vesting date of the Inducement Shares or, if so provided in the Award Agreement, the volume-weighted average

trading price of a Share for up to 60 days immediately preceding such vesting date, (ii) the Fair Market Value of a Share on the date of grant of an Inducement Award, or (iii) any other value of a Share in the applicable agreement setting forth an Inducement Award including but not limited to an asset acquisition agreement, a stock acquisition agreement, a merger agreement, or any similar agreement ("*Value-based Inducement Awards*"). The number of Inducement Shares shall be subject to adjustment pursuant to Section 12, as applicable. For purposes of clarity, the Inducement Shares that may be awarded are in addition to and shall not reduce the number of Shares reserved under Section 5(a) for Awards other than Inducement Awards. The Shares underlying any Inducement Awards that are forfeited, canceled, held back upon exercise of an Inducement Award or settlement of an Inducement Award to cover the exercise price or tax withholding, reacquired by the Company prior to vesting, settled without the issuance of Shares or otherwise terminated (other than by exercise) shall be added back to the number of Inducement Shares available for grant under this Section 15 based on the number of Shares forfeited, canceled, held back, reacquired, settled without the issuance of Shares or otherwise terminated (other than by exercise) for Share-based Inducement Awards and based on vesting date Fair Market Value of the Inducement Shares returning to the Plan or other valuation method set forth in the Award Agreement for Value-based Inducement Awards, but shall not affect the number of Shares available for Awards under Section 5(a).

(b)*Inducement Award Rules*. Notwithstanding anything to the contrary in this Plan, an Inducement Award may be granted only to an Employee as an inducement material to the individual's entering into employment with the Company or an Affiliate within the meaning of New York Stock Exchange Rule 303A.08 and only if such individual has not previously been an Employee or has experienced a bona fide period of interruption of employment with the Company and its Affiliates prior to grant of the Inducement Award. In addition, notwithstanding any other provision of the Plan to the contrary, all such Inducement Awards must be granted by the Committee. No Inducement Award may be an ISO.

SECTION 16.PAYMENT OF DIRECTOR'S FEES IN SECURITIES.

(a)*Effective Date*. No provision of this Section 16 shall be effective unless and until the Board has determined to implement such provision.

(b)*Elections to Receive NSOs, SARs, Restricted Shares or Stock Units*. An Outside Director may elect to receive his or her annual retainer payments and/or meeting fees from the Company in the form of cash, NSOs, SARs, Restricted Shares or Stock Units, or a combination thereof, as determined by the Board. Alternatively, the Board may mandate payment in any of such alternative forms. Such NSOs, SARs, Restricted Shares and Stock Units shall be issued under the Plan. An election under this Section 16 shall be filed with the Company on the prescribed form.

(c)*Number and Terms of NSOs, SARs, Restricted Shares or Stock Units*. The number of NSOs, SARs, Restricted Shares or Stock Units to be granted to Outside Directors in lieu of annual retainers and meeting fees that would otherwise be paid in cash shall be calculated in a manner determined by the Board. The terms of such NSOs, SARs, Restricted Shares or Stock Units shall also be determined by the Board.

SECTION 17.LEGAL AND REGULATORY REQUIREMENTS.

Shares shall not be issued under the Plan unless the issuance and delivery of such Shares complies with (or is exempt from) all applicable requirements of law, including (without limitation) the Securities Act of 1933, as amended, the rules and regulations promulgated thereunder, state securities laws and regulations and the regulations of any stock exchange on which the Company's securities may then be listed, and the Company has obtained the approval or favorable ruling from any governmental agency which the Company determines is necessary or advisable. The Company shall not be liable to a Participant or other persons as to: (a) the non-issuance or sale of Shares as to which the Company has not obtained from any regulatory body having jurisdiction the authority deemed by the Company's counsel to be necessary to the lawful issuance and sale of any Shares under the Plan; and (b) any tax consequences expected, but not realized, by any Participant or other person due to the receipt, exercise or settlement of any Award granted under the Plan.

SECTION 18.TAXES.

(a)*Withholding Taxes*. To the extent required by applicable federal, state, local or foreign law, a Participant or his or her successor shall make arrangements satisfactory to the Company for the satisfaction of any withholding tax obligations that arise in connection with the Plan. The Company shall not be required to issue any Shares or make any cash payment under the Plan until such obligations are satisfied.

(b)*Share Withholding*. The Committee may permit a Participant to satisfy all or part of his or her withholding or income tax obligations by having the Company withhold all or a portion of any Shares that otherwise would be issued to him or her or by surrendering all or a portion of any Shares that he or she previously acquired. Such Shares shall be valued at their Fair Market Value on the date when taxes otherwise would be withheld in cash. In no event may a Participant have Shares withheld that would otherwise be issued to him or her in excess of the number necessary to satisfy the minimum legally required tax withholding.

(c)*Section 409A*. Each Award that provides for "nonqualified deferred compensation" within the meaning of Section 409A of the Code shall be subject to such additional rules and requirements as specified by the Committee from time to time in order to comply with Section 409A. If any amount under such an Award is payable upon a "separation from service" (within the meaning of Section 409A) to a Participant who is then considered a "specified employee" (within the meaning of Section 409A), then no such payment shall be made prior to the date that is the earlier of (i) six months and one day after the Participant's separation from service, or (ii) the Participant's death, but only to the extent such delay is necessary to prevent such payment from being subject to interest, penalties and/or additional tax imposed pursuant to Section 409A. In addition, the settlement of any such Award may not be accelerated except to the extent permitted by Section 409A.

SECTION 19.TRANSFERABILITY.

Unless the agreement evidencing an Award (or an amendment thereto authorized by the Committee) expressly provides otherwise, no Award granted under this Plan, nor any interest in such Award, may be sold, assigned, conveyed, gifted, pledged, hypothecated or otherwise

transferred in any manner (prior to the vesting and lapse of any and all restrictions applicable to Shares issued under such Award), other than by will or the laws of descent and distribution; provided, however, that an ISO may be transferred or assigned only to the extent consistent with Section 422 of the Code. Any purported assignment, transfer or encumbrance in violation of this Section 19 shall be void and unenforceable against the Company.

SECTION 20.PERFORMANCE BASED AWARDS.

The number of Shares or other benefits granted, issued, retainable and/or vested under an Award may be made subject to the attainment of performance goals. The Committee may utilize any performance criteria selected by it in its sole discretion to establish performance goals; provided, however, that in the case of any Performance Based Award, the following conditions shall apply:

(i)The amount potentially available under a Performance Based Award shall be subject to the attainment of pre-established, objective performance goals relating to a specified period of service including but not limited to any of the following performance criteria: (a) cash flow, (b) earnings per share, (c) earnings before interest, taxes and amortization, (d) return on equity, (e) total stockholder return, (f) share price performance, (g) return on capital, (h) return on assets or net assets, (i) revenue, (j) income or net income, (k) operating income or net operating income, (l) operating profit or net operating profit, (m) operating margin or profit margin, (n) return on operating revenue, (o) return on invested capital, (p) market segment shares, (q) costs, (r) expenses, (s) initiation or completion of research activities, (t) initiation or completion of development programs, (u) other milestones with respect to research activities or development programs, (v) regulatory body approval, (w) implementation or completion of critical projects, (x) commercial milestones or (z) other milestones with respect to the growth of the Company's business or the development or commercialization of any product or service ("*Qualifying Performance Criteria*"), any of which may be measured either individually, alternatively or in any combination, applied to either the Company as a whole or to a business unit or Subsidiary, either individually, alternatively or in any combination, and measured either annually or cumulatively over a period of years, on an absolute basis or relative to a pre-established target, to previous years' results or to a designated comparison group or index, in each case as specified by the Committee in the Award;

(ii)The Committee may appropriately adjust the method of evaluating performance under a Qualifying Performance Criteria for a performance period as follows: (i) to exclude asset write-downs, (ii) to exclude litigation or claim judgments or settlements, (iii) to exclude the effect of changes in tax law, accounting principles or other such laws or provisions affecting reported results, (iv) to exclude accruals for reorganization and restructuring programs, (v) to exclude any extraordinary nonrecurring items as determined under generally accepted accounting principles and/or

described in managements' discussion and analysis of financial condition and results of operations appearing in the Company's annual report to stockholders for the applicable year, (vi) to exclude the dilutive effects of acquisitions or joint ventures, (vii) to assume that any business divested by the Company achieved performance objectives at targeted levels during the balance of a performance period following such divestiture, (viii) to exclude the effect of any change in the outstanding shares of common stock of the Company by reason of any stock dividend or split, stock repurchase, reorganization, recapitalization, merger, consolidation, spin-off, combination or exchange of shares or other similar corporate change, or any distributions to common stockholders other than regular cash dividends, (ix) to exclude the effects of stock based compensation and the award of bonuses under the Company's bonus plans; and (x) to exclude costs incurred in connection with potential acquisitions or divestitures that are required to be expensed under generally accepted accounting principles;

(iii)The Committee shall establish the applicable performance goals in writing and an objective method for determining the Award earned by a Participant if the goals are attained, while the outcome is substantially uncertain, and shall determine and certify in writing, for each Participant, the extent to which the performance goals have been met prior to payment or vesting of the Award; and

(iv)The maximum aggregate number of Shares that may be subject to Performance Based Awards granted to a Participant in any calendar year (other than Inducement Awards) is 2,000,000 Shares, and no more than two times this amount in the first year of employment (subject to adjustment under Section 12), and the maximum aggregate amount of cash that may be payable to a Participant under Performance Based Awards granted to a Participant in any calendar year that are Cash-Based Awards is $10,000,000.

SECTION 21.NO EMPLOYMENT RIGHTS.

No provision of the Plan, nor any Award granted under the Plan, shall be construed to give any person any right to become, to be treated as, or to remain an Employee or Consultant. The Company and its Subsidiaries reserve the right to terminate any person's Service at any time and for any reason, with or without notice.

SECTION 22.DURATION AND AMENDMENTS.

(a)*Term of the Plan*. The Plan, as set forth herein, shall come into existence on the date of its adoption by the Board of Directors; provided, however, that no Award may be granted hereunder prior to the Effective Date. The Board of Directors may suspend or terminate the Plan at any time. No ISOs may be granted after the tenth anniversary of the earlier of (i) the date the

Plan is adopted by the Board of Directors, or (ii) the date the Plan is approved the stockholders of the Company.

(b)*Right to Amend the Plan*. The Board of Directors may amend the Plan at any time and from time to time. Rights and obligations under any Award granted before amendment of the Plan shall not be materially impaired by such amendment, except with consent of the Participant. An amendment of the Plan shall be subject to the approval of the Company's stockholders only to the extent required by applicable laws, regulations or rules.

(c)*Effect of Termination*. No Awards shall be granted under the Plan after the termination thereof. The termination of the Plan shall not affect Awards previously granted under the Plan.

SECTION 23.EXECUTION.

To record the amendment and restatement of the Plan by the Board of Directors, the Company has caused its authorized officer to execute the same.

INVITAE CORPORATION

By /s/ Thomas Brida
Name : Thomas Brida
Title: General Counsel and Secretary

Exhibit 10.4

INVITAE CORPORATION

2015 STOCK INCENTIVE PLAN

NOTICE OF RESTRICTED STOCK UNIT AWARD

You have been granted the following restricted Stock Units ("Restricted Stock Units") representing common stock of Invitae Corporation (the "Company") under the Company's 2015 Stock Incentive Plan (as may be amended from time to time, the "Plan"). Capitalized terms not defined herein have the meanings ascribed to them in the Plan.

Name of Participant:	[Name]
Total Number of Restricted Stock Units Granted:	[Total Number of Shares]
Grant Date:	[Date of Grant]
Vesting Commencement Date:	[Vesting Commencement Date]
Vesting Schedule:	Subject to the terms of the Global Restricted Stock Unit Agreement, one-third (33 1/3%) of the Restricted Stock Units subject to this Award vest on each of the first three (3) anniversaries of the Vesting Commencement Date, provided that you have remained in continuous Service with the Company (or a Subsidiary or Affiliate) as of such anniversary.

This Restricted Stock Unit Award is granted under and governed by the terms and conditions of the Plan and the attached Global Restricted Stock Unit Agreement, including any additional terms and conditions for your country included in the appendix attached thereto (the "Appendix" and, together with the Global Restricted Stock Unit Agreement, the "Agreement"), all of which are made a part of this document. This Award will be automatically accepted on your behalf as of two business days prior to the first vesting date. If you wish to decline this Award, please notify the Company at Stock@Invitae.com more than two business days prior to the first vesting date.

By accepting this Award, you further agree that the Company may deliver by e-mail all documents relating to the Plan or this Award (including without limitation, prospectuses required by the U.S. Securities and Exchange Commission) and all other documents that the Company is required to deliver to its security holders (including without limitation, annual reports and proxy statements). You also agree that the Company may deliver these documents by posting them on a website maintained by the Company or by a third party under contract with the Company. If the Company posts these documents on a website, it will notify you by e-mail. You agree to participate in the Plan through an

on-line or electronic system established and maintained by the Company or a third party under contract with the Company.

INVITAE CORPORATION

2015 STOCK INCENTIVE PLAN

GLOBAL RESTRICTED STOCK UNIT AGREEMENT

The Plan and Other Agreements

The Restricted Stock Unit Award you are receiving is granted pursuant and subject in all respects to the applicable provisions of the Notice of Restricted Stock Unit Award (the "Grant Notice"), this Global Restricted Stock Unit Agreement, including any additional terms and conditions for your country including in the appendix attached hereto (the "Appendix" and, together with the Global Restricted Stock Unit Agreement, this "Agreement") and the Invitae Corporation 2015 Stock Incentive Plan (as may be amended from time to time, the "Plan"), which is incorporated herein by reference. Capitalized terms not defined in this Agreement have the meanings ascribed to them in the Plan or the Grant Notice.

The Grant Notice, this Agreement and the Plan constitute the entire understanding between you and the Company regarding this Award. Any prior agreements, commitments or negotiations concerning this Award are superseded. This Agreement may be amended by the Committee without your consent; however, if any such amendment would materially impair your rights or obligations under the Agreement, this Agreement may be amended only by another written agreement, signed by you and the Company.

Payment for Restricted Stock Units

No cash payment is required for the Restricted Stock Units you receive.

Vesting

The Restricted Stock Units that you are receiving will vest in one or more installments as provided in the Grant Notice.

No additional Restricted Stock Units will vest after your Service terminates for any reason. For the avoidance of doubt, Service during only a portion of the vesting schedule, but where your Service terminates prior to a vesting date, will not entitle you to vest in a pro-rata portion of the Restricted Stock Units.

Forfeiture

If your Service terminates for any reason, then the Award expires immediately as to the number of Restricted Stock Units that have not vested before the termination date and do not vest as a result of termination.

This means that the unvested Restricted Stock Units will immediately be cancelled upon termination. You will receive no payment for Restricted Stock Units that are forfeited.

For purposes of the Restricted Stock Units, your Service will be considered terminated as of the date you are no longer actively providing services to the Company or any of its Subsidiaries or Affiliates (regardless of the reason for such termination and whether or not later found to be invalid or in breach of employment laws in the jurisdiction where you are employed or otherwise rendering services or the terms of your employment or other service agreement, if any) and will not be extended by any notice period (*e.g.,* your Service will not be extended by any contractual notice period or period of "garden leave" or similar period mandated under employment laws in the jurisdiction where you are employed or otherwise rendering services or the terms of your employment or other service agreement, if any). The Company shall have exclusive discretion to determine when you are no longer actively providing services for purposes of the Restricted Stock Units (including when you are no longer considered to be in continued Service while on a leave of absence).

Leaves of Absence

For purposes of this Award, your Service does not terminate when you go on a *bona fide* leave of absence, if the leave of absence was approved by the Company or one of its Subsidiaries or Affiliates in writing and if continued participation in the Plan is required by the terms of the leave or by applicable law. However, your Service terminates when such leave ends, unless you immediately return to active work.

If you go on a leave of absence, then the vesting schedule specified in the Grant Notice may be adjusted in accordance with the Company's leave of absence policy or the terms of your leave, to the extent permitted by applicable law. If you commence working on a part-time basis, then the vesting schedule specified in the Grant Notice may be adjusted in accordance with the Company's part-time work policy or the terms of an agreement between you and the Company pertaining to your part-time schedule, to the extent permitted by applicable law.

Nature of Restricted Stock Units	The Restricted Stock Units are mere bookkeeping entries. They represent only the Company's unfunded and unsecured promise to issue Shares on a future date. As a holder of Restricted Stock Units, you have no rights other than the rights of a general creditor of the Company.
No Voting Rights or Dividends	The Restricted Stock Units carry neither voting rights nor rights to dividends. You, or your estate or heirs, have no rights as a stockholder of the Company unless and until the Restricted Stock Units are settled by issuing Shares. No adjustments will be made for dividends or other rights if the applicable record date occurs before your Shares are issued, except as described in the Plan.
Restricted Stock Units Nontransferable	You may not sell, transfer, assign, pledge or otherwise dispose of any Restricted Stock Units. For instance, you may not use the Restricted Stock Units as security for a loan. If you attempt to do any of these things, the Restricted Stock Units will immediately become invalid.
Settlement of Restricted Stock Units	Each of your Restricted Stock Units will be settled when it vests; provided, however, that settlement of each Restricted Stock Unit will generally be deferred to the first permissible trading day for the Shares following the applicable vesting date, but in no event later than December 31 of the calendar year in which the applicable vesting date occurs. For purposes of this Agreement, "permissible trading day" means a day that satisfies all of the following requirements: (a) the exchange on which the Shares are traded is open for trading on that day; (b) you are permitted to sell Shares on that day without incurring liability under Section 16(b) of the Exchange Act, (c) either (i) you are not in possession of material non-public information that would make it illegal for you to sell Shares on that day under Rule 10b-5 under the Exchange Act or (ii) Rule 10b5-1 under the Exchange Act would apply to the sale; (d) you are permitted to sell Shares on that day under such written insider trading policy as may have been adopted by the Company; and (e) you are not prohibited from selling Shares on that day by a written agreement between you and the Company or a third party. At the time of settlement, you will receive one Share for each vested Restricted Stock Unit; provided, however, that no fractional Shares will be issued or delivered pursuant to the Plan or this Agreement, and the Committee will determine whether cash will be paid in lieu of any fractional Share or whether such fractional Share and any rights thereto will be canceled, terminated or otherwise eliminated.

Compliance with Law

Notwithstanding any other provision in the Plan or this Agreement, unless there is an available exemption from registration, qualification or other legal requirement applicable to the Shares, the Company shall not be required to issue any Shares to you prior to the completion of any registration or qualification of the Shares under any U.S. or non-U.S. state or federal securities or exchange control law or under rulings or regulations of the U.S. Securities and Exchange Commission or of any other governmental body, or prior to obtaining any approval or other clearance from any U.S. or non-U.S. local, state or federal governmental agency, which registration, qualification or approval the Company shall, in its absolute discretion, deem necessary or advisable. You understand that the Company is under no obligation to register or qualify the Shares with any U.S. or non-U.S. state or federal securities commission or to seek approval or clearance from any governmental authority for the issuance or sale of the Shares. Further, you agree that the Company shall have unilateral authority to amend this Agreement without your consent to the extent necessary to comply with securities or other laws applicable to the issuance of Shares.

Responsibility for Taxes

Regardless of any action the Company and/or the Subsidiary or Affiliate employing you (the "Employer") takes with respect to any or all income tax, social insurance, payroll tax, fringe benefits tax, payment on account or other tax-related items related to your participation in the Plan and legally applicable or deemed legally applicable to you ("Tax-Related Items"), you acknowledge that the ultimate liability for all Tax-Related Items is and remains your responsibility and may exceed the amount, if any, actually withheld by the Company and/or the Employer. You further acknowledge that the Company and the Employer (1) make no representations or undertakings regarding the treatment of any Tax-Related Items in connection with any aspect of the Award, including, but not limited to, the grant or settlement of the Restricted Stock Units, the subsequent sale of Shares acquired pursuant to such settlement or the receipt of any dividends; and (2) do not commit to, and are under no obligation to, structure the terms of the Award or any aspect of the Restricted Stock Units to reduce or eliminate your liability for Tax-Related Items or achieve any particular tax result. If you are subject to tax in more than one jurisdiction, you acknowledge that the Company and/or the Employer (or former employer, as applicable) may be required to withhold or account for Tax-Related Items in more than one jurisdiction.

Prior to any relevant taxable or tax withholding event, as applicable, you agree to make adequate arrangements satisfactory to the Company and/or the Employer to satisfy all Tax-Related Items. In this regard, you authorize the Company and/or the Employer to satisfy any withholding obligations with regard to Tax-Related Items by one or a combination of the following: (a) withholding from your salary, wages or other cash compensation payable to you by the Company and/or the Employer, (b) withholding Shares otherwise issuable in connection with the vesting/settlement of the Restricted Stock Units, (c) withholding from proceeds of the sale of Shares acquired upon settlement either through a voluntary sale or through a mandatory sale arranged by the Company (on your behalf pursuant to this authorization without further consent), or (d) any other method determined by the Company to be in compliance with applicable laws.

The Company may withhold or account for Tax-Related Items by considering statutory or other withholding rates, including minimum or maximum rates applicable in your jurisdiction(s). In the event of over-withholding, you may receive a refund of any over-withheld amount in cash and will have no entitlement to the equivalent in Shares, or, if not refunded, you may be able to seek a refund from the applicable tax authorities. In the event of under-withholding, you may be required to pay additional Tax-Related Items directly to the applicable tax authorities. If the withholding obligation for Tax-Related Items is satisfied by withholding in Shares, for tax purposes, you will be deemed to have been issued the full number of Shares subject to the Restricted Stock Units, notwithstanding that a number of Shares is held back solely for the purpose of paying the Tax-Related Items.

Finally, you shall pay to the Company or the Employer any amount of Tax-Related Items that the Company or the Employer may be required to withhold as a result of your participation in the Plan or your acquisition of Shares that cannot be satisfied by the means previously described. The Company may refuse to deliver the Shares or proceeds from the sale of Shares, if you fail to comply with your obligations in connection with the Tax-Related Items as described in this section, and your rights to the Shares shall be forfeited if you do not comply with such obligations on or before December 31 of the calendar year in which the applicable vesting date for the Restricted Stock Units occurs.

Nature of Grant	In accepting this Award, you acknowledge, understand and agree that: (a) the Plan is established voluntarily by the Company, it is discretionary in nature, and the Company may amend, modify, suspend or terminate the Plan at any time, to the extent permitted by the Plan; (b) this Award is exceptional, voluntary and occasional and does not create any contractual or other right to receive future grants of restricted stock units, or benefits in lieu of restricted stock units, even if restricted stock units have been granted in the past; (c) all decisions with respect to future restricted stock units or other grants, if any, will be at the sole discretion of the Company; (d) neither this Award nor this Agreement gives you the right to be employed or retained by the Company or the Employer in any capacity, or alters the right of the Company or the Employer to terminate your Service at any time, in accordance with applicable laws with or without cause; (e) you are voluntarily participating in the Plan; (f) the Restricted Stock Units and the Shares subject to the Restricted Stock Units, and the income from and value of same, are not intended to replace any pension rights or compensation; (g) the Restricted Stock Units and the Shares subject to the Restricted Stock Units, and the income from and value of same, are not part of normal or expected compensation for purposes of calculating any severance, resignation, termination, redundancy, dismissal, end-of-service payments, holiday pay, bonuses, long-service awards, pension or retirement or welfare benefits or similar mandatory payments; (h) the future value of the Shares subject to the Restricted Stock Units is unknown, indeterminable and cannot be predicted with certainty; (i) no claim or entitlement to compensation or damages shall arise from the forfeiture of the Restricted Stock Units resulting from your termination of Service (for any reason whatsoever, whether or not later found to be invalid or in breach of employment or other laws in the jurisdiction where you are employed or otherwise rendering service, or the terms of your employment or other service agreement, if any); (j) unless otherwise agreed with the Company, the Restricted Stock Units and the Shares acquired under the Plan, and the income from and value of same, are not granted as consideration for, or in connection with any service you may provide as a director of any Subsidiary or Affiliate; (k) unless otherwise provided in the Plan or by the Company in its discretion, the Restricted Stock Units and the benefits evidenced by this Agreement do not create any entitlement to have the Restricted Stock Units transferred to, or assumed by, another company, nor to be exchanged, cashed out or substituted for, in connection with any corporate transaction affecting the Shares; and (l) the following provisions apply if you are providing Service outside the U.S.: (i) the Restricted Stock Units and Shares subject to the Restricted Stock Units , and the income from and value of same, are not part of normal or expected compensation for any purposes; and (ii) neither the Company, the Employer, nor any other Subsidiary or Affiliate shall be liable for any foreign exchange rate fluctuation between your local currency and the United States dollar that may affect the value of the Restricted Stock Units or of any amounts due to you upon vesting or the subsequent sale of Shares acquired under the Plan.
Adjustments	The number of Restricted Stock Units covered by this Award shall be subject to adjustment in the event of a stock split, a stock dividend or a similar change in Company Shares, and in other circumstances, as set forth in the Plan. The forfeiture provisions and restrictions described above will apply to all new, substitute or additional Restricted Stock Units or securities to which you are entitled by reason of this Award.
Appendix	Notwithstanding any provisions in this Global Restricted Stock Unit Agreement, the Restricted Stock Units will be subject to any additional terms and conditions for your country set forth in the Appendix attached hereto. Moreover, if you relocate to one of the countries included in the Appendix, the additional terms and conditions for such country, if any, will apply to you, to the extent the Company determines that the application of such terms and conditions is necessary or advisable for legal or administrative reasons. The Appendix constitutes part of this Agreement.
No Advice Regarding Grant	The Company is not providing any tax, legal or financial advice, nor is the Company making any recommendations regarding your participation in the Plan, or the acquisition or sale of Shares. You should consult with your own personal tax, legal and financial advisors regarding your participation in the Plan before taking any action related to the Plan.

Restrictions on Resale; Insider Trading / Market Abuse Laws	You agree not to sell any Shares at a time when applicable laws, Company policies or an agreement between the Company and its underwriters prohibit a sale. This restriction will apply as long as your Service continues and for such period of time after the termination of your Service as the Company may specify. You understand that you may be subject to insider trading restrictions and/or market abuse laws in applicable jurisdictions, including but not limited to your country, the broker's country and the country in which the Shares are listed, which may affect your ability, directly or indirectly, to accept, acquire, sell or attempt to sell, or otherwise dispose of Shares, rights to Shares (*e.g.*, Restricted Stock Units) or rights linked to the value of Shares, during such times as you are considered to have "inside information" regarding the Company (as defined by the laws in the applicable jurisdiction(s)). Local insider trading laws and regulations may prohibit the cancelation or amendment of orders you placed before possessing the inside information. Furthermore, you understand that you may be prohibited from (i) disclosing the inside information to any third party, including fellow employees (other than on a "need to know" basis) and (ii) "tipping" third parties by sharing with them Company inside information, or otherwise causing third parties to buy or sell Company securities. Any restrictions under these laws or regulations are separate from and in addition to restrictions that may apply to you under the Company's insider trading policy. It is your responsibility to comply with the Company's insider trading policy and any applicable regulatory trading restrictions. You should consult with your personal legal advisor on this matter.
Exchange Control, Foreign Asset/Account and/or Tax Reporting	Depending on the country to which laws you are subject, there may be certain foreign asset/account and/or tax reporting requirements which may affect your ability to acquire or hold Shares or cash received from participating in the Plan (including from any dividends paid on Shares or sale proceeds arising from the sale of Shares) in a brokerage or bank account outside your country. You may also be required to report such accounts, assets or related transactions to the tax or other authorities in your country. You may also be required to repatriate sale proceeds or other funds received as a result of your participation in the Plan to your country within a certain time after receipt. It is your responsibility to comply with such regulations and you should speak to your personal legal advisor regarding this matter.
Language	You acknowledge that you are sufficiently proficient in English, or have consulted with an advisor who is sufficiently proficient in English, so as to allow you to understand the terms and conditions of this Agreement. If you have received this Agreement or any other document(s) related to the Plan translated into a language other than English and if the meaning of the translated version is different than the English version, the English version will control.
Imposition of Other Requirements	The Company reserves the right to impose other requirements on your participation in the Plan and on any Shares acquired under the Plan, if the Company determines it is necessary or advisable for legal or administration reasons, and to require you to sign any additional agreements or undertakings that may be necessary to accomplish the foregoing.

Successors and Assigns	Except as otherwise provided in the Plan or this Agreement, every term of this Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective heirs, legatees, legal representatives, successors, transferees and assigns.
Notice	Any notice required or permitted under this Agreement shall be given in writing and shall be deemed effectively given upon the earliest of personal delivery, receipt or the third full day following mailing with postage and fees prepaid, addressed to the other party hereto at: (i) if such notice is given by the Company, the address then listed in the Company's records, (ii) if such notice is given by you, the address of the Company's headquarters, or (iii) at such other address as a receiving party may designate by ten (10) days' advance written notice to the other party hereto.
Section 409A of the Code	To the extent this Agreement is subject to and not exempt from Section 409A of the Code, this Agreement is intended to comply with Section 409A and the regulations promulgated thereunder, and its provisions shall be interpreted in a manner consistent with such intent. You acknowledge and agree that changes may be made to this Agreement to avoid adverse tax consequences to you under Section 409A.
Governing Law and Choice of Venue	This Agreement will be interpreted and enforced under the laws of the State of Delaware (without regard to its choice-of-law provisions). For purposes of litigating any dispute that arises directly or indirectly from the relationship of the parties evidenced by this Award or the Agreement, the parties hereby submit to and consent to the exclusive jurisdiction of the State of California and agree that such litigation shall be conducted only in the courts of San Francisco County, California, or the federal courts for the United States for the Northern District of California, and no other courts, where this grant is made and/or to be performed.
Severability	The provisions of this Agreement are severable and if any one or more of the provisions are determined to be illegal or otherwise unenforceable, in whole or in part, the remaining provisions will nevertheless be binding and enforceable.

Waiver	You acknowledge that a waiver by the Company of a breach of any provision of this Agreement shall not operate or be construed as a waiver of any other provision of this Agreement, or of any subsequent breach by you or any other participant.
Data Privacy	***You hereby explicitly and unambiguously consent to the collection, use and transfer, in electronic or other form, of your personal data as described in this Agreement and any other grant materials by and among, as applicable, the Company, the Employer and any other Subsidiary or Affiliate for the exclusive purpose of implementing, administering and managing your participation in the Plan. You understand and acknowledge that the Company, the Employer and other Subsidiaries and Affiliates hold certain personal information about you, including (without limitation) your name, home address, email address, telephone number, date of birth, social insurance number, passport or other government identification number, salary, nationality, job title, any shares of stock or directorships held in the Company and details of all equity awards or any other entitlements to shares of stock awarded, canceled, exercised, vested, unvested or outstanding in your favor (the "Data") for the purpose of implementing, managing and administering your participation in the Plan. You further understand and acknowledge that the Company, the Employer and the other Subsidiaries and/or Affiliates will transfer Data among themselves as necessary for the exclusive purpose of implementation, administration and management of your participation in the Plan and that the Company, the Employer and/or any Subsidiary or Affiliate may each further transfer Data to E*TRADE Financial Services, Inc. and certain of its affiliates ("E*TRADE") and certain of its affiliates or such other third party, which are assisting the Company (or may assist the Company in the future) in the implementation, administration and management of the Plan. You understand and acknowledge that the recipients of Data may be located in the United States or elsewhere, and that the laws of a recipient's country of operation (e.g., the United States) may not have equivalent privacy protections as local laws where you reside or work. If you reside outside the United States, you may request a list with the names and addresses of any potential recipients of Data by contacting Privacy@Invitae.com. You authorize the Company, E*TRADE and any other possible recipients which may assist the Company (presently or in the future) with implementing, administering and managing the Plan to receive, possess, use, retain and transfer Data, in electronic or other form, for the sole purpose of implementing, administering and managing your participation in the Plan. Data will be held only as long as is necessary to implement, administer and manage your participation in the Plan. If you reside outside the United States, you may at any time view Data, request additional information about the storage and processing of Data, require any necessary amendments to Data or refuse or withdraw the consents herein, in any case without cost, by contacting in writing your local human resources representative. Further, you are providing the consents herein on a purely voluntary basis. If you do not consent, or if you later seek to revoke your consent, your Service and career with the Employer will not be affected; the only consequence of refusing or withdrawing your consent is that the Company would not be able to grant you this Award or other equity awards or administer or maintain such awards. Therefore, you understand that refusing or withdrawing your consent may affect your ability to participate in the Plan. For more information on the consequences of your refusal to consent or withdrawal of consent, you understand that you may contact Privacy@Invitae.com.***

BY ACCEPTING THIS AWARD, YOU AGREE TO ALL OF THE TERMS AND CONDITIONS DESCRIBED IN THIS AGREEMENT, THE GRANT NOTICE AND THE PLAN.

Appendix
to the

Global Restricted Stock Unit Agreement

Capitalized terms not defined in this Appendix have the meanings ascribed to them in the Plan, the Grant Notice or the Global Restricted Stock Unit Agreement.

Terms and Conditions

This Appendix includes additional terms and conditions that govern the Restricted Stock Units if you reside and/or work in one of the countries listed herein. If you are a citizen or resident of a country other than the one in which you are currently residing and/or working, transfer employment and/or residency to another country after receiving the Restricted Stock Units, or you are considered a resident of another country for local law purposes, the Company shall, in its discretion, determine to what extent the terms and conditions herein will apply to you.

Notifications

This Appendix also includes information regarding taxes and certain other issues of which you should be aware with respect to participation in the Plan. The information is based on the securities, exchange control, income tax and other laws in effect in the respective countries as of August 2021. Such laws are often complex and change frequently. As a result, the Company strongly recommends that you not rely on the information herein as the only source of information relating to the consequences of participation in the Plan, because the information may be out of date at the time you vest in the Restricted Stock Units or sell Shares acquired under the Plan.

In addition, the information contained herein is general in nature and may not apply to your particular situation, and the Company is not in a position to assure you of any particular result. Accordingly, you should seek appropriate professional advice as to how the relevant laws in your country may apply to your personal situation.

If you are a citizen or resident of a country other than the one in which you are currently residing and/or working, transfer employment and/or residency to another country after the grant of the Restricted Stock Units, or you are considered a resident of another country for local law purposes, the information contained herein may not be applicable to you in the same manner.

EUROPEAN UNION ("EU") / EUROPEAN ECONOMIC AREA ("EEA") / UNITED KINGDOM ("UK")

Terms and Conditions

Data Privacy Notice. The following section replace the "Data Privacy" section of the Global Restricted Stock Unit Agreement in its entirety:

Purposes and Legal Bases of Processing. The Company processes Data (as defined below) for the purpose of administering and managing your participation in the Plan and facilitating compliance with applicable tax, exchange control, securities and labor laws. The legal basis for the processing of Data by the Company and the third-party service providers described below is the necessity of the data processing for the Company to perform its contractual obligations in connection with the Restricted Stock Units and for the Company's legitimate business interests of managing the Plan and generally administering employee equity awards.

Data Collection and Processing. The Company and the Employer collect, process and use certain personal information about you, including, but not limited to, your name, home address, telephone number, email address, date of birth, social insurance number, passport or other identification number, salary, nationality, job title, any shares or directorships held in the Company, details of all awards granted under the Plan or any other entitlement to shares awarded, canceled, exercised, vested, unvested or outstanding in your favor ("Data"), for the legitimate purpose of managing your participation in the Plan.

Stock Plan Administration and Other Service Providers. The Company transfers Data to E*TRADE Financial Services, Inc. and certain of its affiliates ("E*TRADE") which is assisting the Company with the implementation, administration and management of the Plan. The Company may decide to engage a different stock plan administration service provider in the future and will notify you accordingly. You may be asked to agree on separate terms and data processing practices with E*TRADE (or any future service provider), with such agreement being a condition to the ability to participate in the Plan.

International Data Transfers. The Company and its service providers, including without limitation E*TRADE, operate (with respect to the Company) in the United States. Your country or jurisdiction may have different data privacy laws and protections than the United States. By participating in the Plan, you acknowledge and accept that the transfer of Data outside your country or jurisdiction is necessary for the Company to perform its contractual obligations under the Agreement and for the Company's legitimate business interests of managing the Plan and generally administering employee participation. To the extent required by applicable law, the Company shall implement appropriate safeguards for international transfers of Data, including, for example, by executing standard contractual clauses approved for such use by the European Commission.

Data Retention. The Company will hold and use Data only as long as is necessary to implement, administer and manage your participation in the Plan, or as required to comply

with legal or regulatory obligations, including under tax, exchange control, labor and securities laws. The period may extend beyond your period of Service.

Contractual Requirement. Your provision of Data and its processing and transfer as described above is a contractual requirement and a condition to your ability to participate in the Plan. You can refuse to provide Data or to have Data processed or transferred, as a result of which you will not be able to participate in the Plan, but your Service and career with the Employer will not be affected.

Data Subject Rights. You may have a number of rights under data privacy laws in your jurisdiction. Depending on where you are based, such rights may include the right to (i) request access to or copies of Data, (ii) rectify incorrect Data, (iii) delete Data, (iv) restrict the processing of Data, (v) restrict the portability of Data, (vi) lodge complaints with competent authorities, and/or (vii) receive a list with the names and addresses of any potential recipients of Data. To receive clarification regarding these rights or to exercise these rights, you can contact Privacy@Invitae.com.

AUSTRALIA

Terms and Conditions

Australia Offer Document. The Company is pleased to provide you with this offer to participate in the Plan. This offer sets out information regarding this Award to Australian resident Participants. This information is provided by the Company to ensure compliance of the Plan with the Australian Securities and Investments Commission ("ASIC") Class Order 14/1000 and relevant provisions of the Corporations Act 2001.

In addition to the information set out in the Agreement (including this Appendix), you are also being provided with copies of the following documents:

(a)the Plan;
(b)the Prospectus; and
(c)the Employee Information Supplement[1] for Australia.

(collectively, the "Additional Documents").

The Additional Documents provide further information to help you make an informed investment decision about participating in the Plan. Neither the Plan nor the Prospectus is a prospectus for the purposes of the Corporations Act 2001.

[1] NTD: We have not prepared tax supplements yet. To rely on the Class Order 14/1000, the company is required to provide information on the material tax consequences to participants in Australia. Our clients typically prepare these short tax summaries, one for each country, as supplements to the plan prospectus.

You should not rely upon any oral statements made in relation to this offer. You should rely only upon statements contained in the Agreement (including this Appendix) and the Additional Documents when considering participation in the Plan.

Notifications

Tax Information. The Plan is a plan to which Subdivision 83A-C of the Income Tax Assessment Act 1997 (Cth) (the **"**Act**"**) applies (subject to the conditions in the Act).

Securities Law Information. Investment in Shares involves a degree of risk. Eligible employees who elect to participate in the Plan should monitor their participation and consider all risk factors relevant to the acquisition of Shares under the Plan as set forth below and in the Additional Documents.

The information herein is general information only. It is not advice or information that takes into account your personal objectives, financial situation and needs. You should consider obtaining your own financial product advice from a person who is licensed by ASIC to give such advice.

Additional Risk Factors for Australian Residents. You should have regard to risk factors relevant to investment in securities generally and, in particular, to the holding of Shares. For example, the price at which the Shares quoted on the New York Stock Exchange may increase or decrease due to a number of factors. There is no guarantee that the price of the Shares will increase. Factors that may affect the price of the Shares include fluctuations in the domestic and international market for listed stocks, general economic conditions, including interest rates, inflation rates, commodity and oil prices, changes to government fiscal, monetary or regulatory policies, legislation or regulation, the nature of the markets in which the Company operates and general operational and business risks.

More information about potential factors that could affect the Company's business and financial results will included in the Company's Quarterly Report on Form 10-Q and the Company's Annual Report on Form 10-K. Copies of these reports will be available at www.sec.gov/, on the Company's "Investor Relations" page at ir.invitae.com/, and upon request to the Company.

In addition, you should be aware that the Australian dollar value of Shares acquired at settlement will be affected by the U.S. dollar/Australian dollar exchange rate. Participation in the Plan involves certain risks related to fluctuations in this rate of exchange.

Common Stock in a U.S. Corporation. Common stock of a U.S. corporation is analogous to ordinary shares of an Australian corporation. Each holder of the Company's common stock is entitled to one vote for every Share of common stock.

Dividends may be paid on the Shares out of any funds of the Company legally available for dividends at the discretion of the Board.

Shares are traded on the New York Stock Exchange in the United States of America under the symbol "NVTA."

Shares are not liable to any further calls for payment of capital or for other assessment by the Company and have no sinking fund provisions, pre-emptive rights, conversion rights or redemption provisions.

Ascertaining the Market Price of Shares. You may ascertain the current market price of Shares as traded on the New York Stock Exchange under the symbol "NVTA" at www.nyse.com/site-search?q=nvta. The Australian dollar equivalent of that price can be obtained at: www.rba.gov.au/statistics/frequency/exchange-rates.html.

This will not be a prediction of what the market price per Share will be when the Restricted Stock Units vest or when Shares are issued or of the applicable rate on the actual vesting date or the date of Share issuance.

BELGIUM

Notifications

Exchange Control Information. Belgian residents are required to provide the National Bank of Belgium with the account details of any such foreign accounts. This report, as well as additional information on how to complete it, can be found on the website of the National Bank of Belgium, www.nbb.be, under the *Kredietcentrales / Centrales des crédits* caption.

GERMANY

Notifications

Exchange Control Information. Cross-border payments in excess of €12,500 must be reported electronically to the German Federal Bank (*Bundesbank*) on a monthly basis. In case of payments in connection with securities (including proceeds realized upon the sale of Shares), the report must be made by the 5th day of the month following the month in which the payment was received. The form of report ("*Allgemeine Meldeportal Statistik*") can be accessed via the *Bundesbank's* website (www.bundesbank.de) and is available in both German and English. You are responsible for obtaining the appropriate form from the bank and complying with the applicable reporting obligations.

ISRAEL

Terms and Conditions

Tax Consent. The Israeli Tax Authority has issued a tax ruling to the Company in connection with the non-trustee track of Section 102 of the Income Tax Ordinance [New Version], 1961 (the "Tax Ruling") regarding the taxation of Shares settled under the Plan. You may review a copy of the Tax Ruling by contacting Stock Administration at Stock@Invitae.com. In accordance with the Tax Ruling and by participating in the Plan, you hereby declare that you understand the provisions of the Tax Ruling and the obligation to report and pay any capital gains tax due upon the sale of the Shares purchased under the Plan (including filing an annual tax return). Further,

you agree to act in accordance with the Tax Ruling and will not request to amend, cancel, and/or replace it with a different ruling and/or demand any additional tax benefit beyond the provisions of the Tax Ruling.[2]

Notifications

Securities Law Information. The grant of Restricted Stock Units does not constitute a public offering under the Securities Law, 1968.

NETHERLANDS

There are no country-specific provisions.

UNITED KINGDOM

Terms and Conditions

Settlement. Notwithstanding any discretion in the Plan or the Agreement, any Restricted Stock Units that vest will be settled in whole Shares. For the avoidance of doubt, under no circumstances will Restricted Stock Units be settled in cash.

Responsibility for Taxes. The following provisions supplement the "Responsibility for Taxes" section of the Global Restricted Stock Unit Agreement:

Without limitation to the "Responsibility for Taxes" section of the Global Restricted Stock Unit Agreement, you agree that you are liable for all Tax-Related Items and hereby covenant to pay all such Tax-Related Items, as and when requested by the Company, the Employer or by Her Majesty's Revenue & Customs ("HMRC") (or any other tax authority or any other relevant authority). You also agree to indemnify and keep indemnified the Company and the Employer against any Tax-Related Items that they are required to pay or withhold or have paid or will pay to HMRC (or any other tax authority or any other relevant authority) on your behalf.

Notwithstanding the foregoing, if you are a director or executive officer of the Company (within the meaning of Section 13(k) of the Exchange Act), you understand that you may not be able to indemnify the Company or the Employer for the amount of any Tax-Related Items not collected from or paid by you if the indemnification could be considered to be a loan. In this case, the Tax-Related Items not collected from or paid by you within 90 days of the end of the U.K. tax year in which an event giving rise to the taxable event occurs, may constitute an additional benefit to you on which additional income tax and National Insurance contributions ("NICs") may be payable. You understand that you will be responsible for reporting and paying any income tax due on this additional benefit directly to HMRC under the self-assessment regime and for paying to the Company and/or the Employer (as appropriate) the amount of any employee NICs due on this additional benefit, which may also be recovered from you by any of

[2] NTD: This provision assumes the company will have obtained the green track ruling with the Israel Tax Authority to move the taxable event from sale of shares to the issuance of shares.

the means referred to in the "Responsibility for Taxes" section of the Global Restricted Stock Unit Agreement.

Exhibit 31.1

PRINCIPAL EXECUTIVE OFFICER'S CERTIFICATION PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Sean E. George, certify that:

1.I have reviewed this quarterly report on Form 10-Q of Invitae Corporation for the period ended September 30, 2021;

2.Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3.Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4.The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a)Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b)Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c)Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d)Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5.The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a)All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b)Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Dated: November 9, 2021

/s/ Sean E. George, Ph.D.
Sean E. George, Ph.D.
Chief Executive Officer and Director
(Principal Executive Officer)

Exhibit 31.2

PRINCIPAL FINANCIAL OFFICER'S CERTIFICATION PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Yafei (Roxi) Wen, certify that:

1.I have reviewed this quarterly report on Form 10-Q of Invitae Corporation for the period ended September 30, 2021;

2.Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3.Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4.The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a)Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b)Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c)Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d)Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5.The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a)All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b)Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Dated: November 9, 2021

/s/ Yafei (Roxi) Wen
Yafei (Roxi) Wen
Chief Financial Officer
(Principal Financial Officer)

Exhibit 32.1

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the quarterly report of Invitae Corporation (the "Company") on Form 10-Q for the period ended September 30, 2021, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned officer of the Company certifies, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to such officer's knowledge:

(1)The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2)The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: November 9, 2021

/s/ Sean E. George, Ph.D.
Sean E. George, Ph.D.
Chief Executive Officer and Director
(Principal Executive Officer)

Exhibit 32.2

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the quarterly report of Invitae Corporation (the "Company") on Form 10-Q for the period ended September 30, 2021, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned officer of the Company certifies, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to such officer's knowledge:

(1)The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2)The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: November 9, 2021

/s/ Yafei (Roxi) Wen
Yafei (Roxi) Wen
Chief Financial Officer
(Principal Financial Officer)

Cover - Cover Page

Cover Page - shares	XBRL Details					9 Months Ended	
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Oct. 29, 2021
Cover [Abstract]	dei_CoverAbstract	dei_	xbrli:stringItemType	na	duration		
Document Type	dei_DocumentType	dei_	dei:submissionTypeItemType	na	duration	10-Q	
Document Period End Date	dei_DocumentPeriodEndDate	dei_	xbrli:dateItemType	na	duration	Sep. 30, 2021	
Document Quarterly Report	dei_DocumentQuarterlyReport	dei_	xbrli:booleanItemType	na	duration	true	
Document Transition Report	dei_DocumentTransitionReport	dei_	xbrli:booleanItemType	na	duration	false	
Entity File Number	dei_EntityFileNumber	dei_	dei:fileNumberItemType	na	duration	001-36847	
Entity Registrant Name	dei_EntityRegistrantName	dei_	xbrli:normalizedStringItemType	na	duration	Invitae Corp	
Entity Incorporation, State or Country Code	dei_EntityIncorporationStateCountryCode	dei_	dei:edgarStateCountryItemType	na	duration	DE	
Entity Tax Identification Number	dei_EntityTaxIdentificationNumber	dei_	dei:employerIdItemType	na	duration	27-1701898	
Entity Address, Address Line One	dei_EntityAddressAddressLine1	dei_	xbrli:normalizedStringItemType	na	duration	1400 16th Street	
Entity Address, City or Town	dei_EntityAddressCityOrTown	dei_	xbrli:normalizedStringItemType	na	duration	San Francisco	
Entity Address, State or Province	dei_EntityAddressStateOrProvince	dei_	dei:stateOrProvinceItemType	na	duration	CA	
Entity Address, Postal Zip Code	dei_EntityAddressPostalZipCode	dei_	xbrli:normalizedStringItemType	na	duration	94103	
City Area Code	dei_CityAreaCode	dei_	xbrli:normalizedStringItemType	na	duration	415	
Local Phone Number	dei_LocalPhoneNumber	dei_	xbrli:normalizedStringItemType	na	duration	374-7782	
Title of 12(b) Security	dei_Security12bTitle	dei_	dei:securityTitleItemType	na	duration	Common Stock, $0.0001 par value per share	
Trading Symbol	dei_TradingSymbol	dei_	dei:tradingSymbolItemType	na	duration	NVTA	
Security Exchange Name	dei_SecurityExchangeName	dei_	dei:edgarExchangeCodeItemType	na	duration	NYSE	
Entity Current Reporting Status	dei_EntityCurrentReportingStatus	dei_	dei:yesNoItemType	na	duration	Yes	
Entity Interactive Data Current	dei_EntityInteractiveDataCurrent	dei_	dei:yesNoItemType	na	duration	Yes	
Entity Filer Category	dei_EntityFilerCategory	dei_	dei:filerCategoryItemType	na	duration	Large Accelerated Filer	
Entity Small Business	dei_EntitySmallBusiness	dei_	xbrli:booleanItemType	na	duration	false	
Entity Emerging Growth Company	dei_EntityEmergingGrowthCompany	dei_	xbrli:booleanItemType	na	duration	false	
Entity Shell Company	dei_EntityShellCompany	dei_	xbrli:booleanItemType	na	duration	false	
Entity Common Stock, Shares Outstanding	dei_EntityCommonStockSharesOutstanding	dei_	xbrli:sharesItemType	na	instant		226,370,843
Current Fiscal Year End Date	dei_CurrentFiscalYearEndDate	dei_	xbrli:gMonthDayItemType	na	duration	--12-31	
Document Fiscal Year Focus	dei_DocumentFiscalYearFocus	dei_	xbrli:gYearItemType	na	duration	2021	
Document Fiscal Period Focus	dei_DocumentFiscalPeriodFocus	dei_	dei:fiscalPeriodItemType	na	duration	Q3	
Amendment Flag	dei_AmendmentFlag	dei_	xbrli:booleanItemType	na	duration	false	
Entity Central Index Key	dei_EntityCentralIndexKey	dei_	dei:centralIndexKeyItemType	na	duration	0001501134	

+ References + Details

Cover - Condensed Consolidated Balance Sheets

Condensed Consolidated Balance Sheets - USD ($) $ in Thousands	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Dec. 31, 2020
Current assets:	us-gaap_AssetsCurrentAbstract	us-gaap_	xbrli:stringItemType	na	duration		
Cash and cash equivalents	us-gaap_CashAndCashEquivalentsAtCarryingValue	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 921,634	$ 124,794
Marketable securities	us-gaap_AvailableForSaleSecuritiesDebtSecuritiesCurrent	us-gaap_	xbrli:monetaryItemType	debit	instant	320,465	229,186
Accounts receivable	us-gaap_AccountsReceivableNetCurrent	us-gaap_	xbrli:monetaryItemType	debit	instant	58,431	47,722
Inventory	us-gaap_InventoryNet	us-gaap_	xbrli:monetaryItemType	debit	instant	30,633	32,030
Prepaid expenses and other current assets	us-gaap_PrepaidExpenseAndOtherAssetsCurrent	us-gaap_	xbrli:monetaryItemType	debit	instant	34,401	20,200
Total current assets	us-gaap_AssetsCurrent	us-gaap_	xbrli:monetaryItemType	debit	instant	1,365,564	453,932
Property and equipment, net	us-gaap_PropertyPlantAndEquipmentNet	us-gaap_	xbrli:monetaryItemType	debit	instant	101,000	66,102
Operating lease assets	us-gaap_OperatingLeaseRightOfUseAsset	us-gaap_	xbrli:monetaryItemType	debit	instant	119,194	45,109
Restricted cash	us-gaap_RestrictedCashAndCashEquivalents	us-gaap_	xbrli:monetaryItemType	debit	instant	10,275	6,686
Intangible assets, net	us-gaap_IntangibleAssetsNetExcludingGoodwill	us-gaap_	xbrli:monetaryItemType	debit	instant	1,168,157	981,845
Goodwill	us-gaap_Goodwill	us-gaap_	xbrli:monetaryItemType	debit	instant	2,283,059	1,863,623
Other assets	us-gaap_OtherAssetsNoncurrent	us-gaap_	xbrli:monetaryItemType	debit	instant	23,790	13,188
Total assets	us-gaap_Assets	us-gaap_	xbrli:monetaryItemType	debit	instant	5,071,039	3,430,485
Current liabilities:	us-gaap_LiabilitiesCurrentAbstract	us-gaap_	xbrli:stringItemType	na	duration		
Accounts payable	us-gaap_AccountsPayableCurrent	us-gaap_	xbrli:monetaryItemType	credit	instant	35,404	25,203
Accrued liabilities	us-gaap_AccruedLiabilitiesCurrent	us-gaap_	xbrli:monetaryItemType	credit	instant	104,308	86,058
Operating lease obligations	us-gaap_OperatingLeaseLiabilityCurrent	us-gaap_	xbrli:monetaryItemType	credit	instant	12,636	8,789
Finance lease obligations	us-gaap_FinanceLeaseLiabilityCurrent	us-gaap_	xbrli:monetaryItemType	credit	instant	3,825	1,695
Total current liabilities	us-gaap_LiabilitiesCurrent	us-gaap_	xbrli:monetaryItemType	credit	instant	156,173	121,745
Operating lease obligations, net of current portion	us-gaap_OperatingLeaseLiabilityNoncurrent	us-gaap_	xbrli:monetaryItemType	credit	instant	120,467	48,357
Finance lease obligations, net of current portion	us-gaap_FinanceLeaseLiabilityNoncurrent	us-gaap_	xbrli:monetaryItemType	credit	instant	6,467	3,123
Debt	us-gaap_OtherLongTermDebtNoncurrent	us-gaap_	xbrli:monetaryItemType	credit	instant	111,156	104,449
Convertible senior notes, net	us-gaap_ConvertibleDebtNoncurrent	us-gaap_	xbrli:monetaryItemType	credit	instant	1,462,499	283,724
Deferred tax liability	us-gaap_DeferredIncomeTaxLiabilitiesNet	us-gaap_	xbrli:monetaryItemType	credit	instant	51,378	51,538
Other long-term liabilities	us-gaap_OtherLiabilitiesNoncurrent	us-gaap_	xbrli:monetaryItemType	credit	instant	56,182	841,256
Total liabilities	us-gaap_Liabilities	us-gaap_	xbrli:monetaryItemType	credit	instant	1,964,322	1,454,192
Commitments and contingencies (Note 8)	us-gaap_CommitmentsAndContingencies	us-gaap_	xbrli:monetaryItemType	credit	instant		
Stockholders' equity:	us-gaap_StockholdersEquityAbstract	us-gaap_	xbrli:stringItemType	na	duration		
Common stock	us-gaap_CommonStockValue	us-gaap_	xbrli:monetaryItemType	credit	instant	23	19
Accumulated other comprehensive income	us-gaap_AccumulatedOtherComprehensiveIncomeLossNetOfTax	us-gaap_	xbrli:monetaryItemType	credit	instant	21	1
Additional paid-in capital	us-gaap_AdditionalPaidInCapital	us-gaap_	xbrli:monetaryItemType	credit	instant	4,624,397	3,337,120
Accumulated deficit	us-gaap_RetainedEarningsAccumulatedDeficit	us-gaap_	xbrli:monetaryItemType	credit	instant	(1,517,724)	(1,360,847)
Total stockholders' equity	us-gaap_StockholdersEquity	us-gaap_	xbrli:monetaryItemType	credit	instant	3,106,717	1,976,293
Total liabilities and stockholders' equity	us-gaap_LiabilitiesAndStockholdersEquity	us-gaap_	xbrli:monetaryItemType	credit	instant	$ 5,071,039	$ 3,430,485

+ References + Details

Cover - Condensed Consolidated Statements of Operations

Condensed Consolidated Statements of Operations - USD ($) shares in Thousands, $ in Thousands	XBRL Details					3 Months Ended		9 Months Ended	
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Sep. 30, 2020	Sep. 30, 2021	Sep. 30, 2020
Revenue:	us-gaap_RevenuesAbstract	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 114,395	$ 68,728	$ 334,328	$ 179,167
Cost of revenue	us-gaap_CostOfRevenue	us-gaap_	xbrli:monetaryItemType	debit	duration	87,741	46,643	252,563	130,017
Research and development	us-gaap_ResearchAndDevelopmentExpense	us-gaap_	xbrli:monetaryItemType	debit	duration	97,511	37,802	284,323	168,433
Selling and marketing	us-gaap_SellingAndMarketingExpense	us-gaap_	xbrli:monetaryItemType	debit	duration	55,501	37,800	163,705	119,440
General and administrative	us-gaap_GeneralAndAdministrativeExpense	us-gaap_	xbrli:monetaryItemType	debit	duration	86,820	27,810	197,640	77,638
Change in fair value of contingent consideration	us-gaap_BusinessCombinationContingentConsiderationArrangementsChangeInAmountOfContingentConsiderationLiability1	us-gaap_	xbrli:monetaryItemType	debit	duration	(19,866)	(504)	(386,836)	4,328
Loss from operations	us-gaap_OperatingIncomeLoss	us-gaap_	xbrli:monetaryItemType	credit	duration	(193,312)	(80,823)	(177,067)	(320,689)
Other income (expense), net	us-gaap_OtherNonoperatingIncomeExpense	us-gaap_	xbrli:monetaryItemType	credit	duration	3,357	(15,771)	9,846	(32,499)
Interest expense	us-gaap_InterestExpense	us-gaap_	xbrli:monetaryItemType	debit	duration	(14,069)	(6,308)	(35,869)	(17,244)
Net loss before taxes	us-gaap_IncomeLossFromContinuingOperationsBeforeIncomeTaxesExtraordinaryItemsNoncontrollingInterest	us-gaap_	xbrli:monetaryItemType	credit	duration	(204,024)	(102,902)	(203,090)	(370,432)
Income tax benefit	us-gaap_IncomeTaxExpenseBenefit	us-gaap_	xbrli:monetaryItemType	debit	duration	(5,848)	0	(29,208)	(2,600)
Net loss	us-gaap_NetIncomeLoss	us-gaap_	xbrli:monetaryItemType	credit	duration	$ (198,176)	$ (102,902)	$ (173,882)	$ (367,832)
Net loss per share, basic (in dollars per share)	us-gaap_EarningsPerShareBasic	us-gaap_	dtr-types:perShareItemType	na	duration	$ (0.91)	$ (0.78)	$ (0.85)	$ (3.08)
Net loss per share, diluted (in dollars per share)	us-gaap_EarningsPerShareDiluted	us-gaap_	dtr-types:perShareItemType	na	duration	$ (0.91)	$ (0.78)	$ (0.85)	$ (3.08)
Shares used in computing net loss per share, basic	us-gaap_WeightedAverageNumberOfSharesOutstandingBasic	us-gaap_	xbrli:sharesItemType	na	duration	218,384	132,484	205,587	119,386
Shares used in computing net loss per share, diluted	us-gaap_WeightedAverageNumberOfDilutedSharesOutstanding	us-gaap_	xbrli:sharesItemType	na	duration	218,384	132,484	205,587	119,386
Test revenue	srt_ProductOrServiceAxis=nvta_DiagnosticTestsMember		na						
Revenue:	us-gaap_RevenuesAbstract	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 111,676	$ 67,326	$ 322,448	$ 175,503
Other revenue	srt_ProductOrServiceAxis=nvta_CollaborationAndGenomeNetworkMember		na						
Revenue:	us-gaap_RevenuesAbstract	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 2,719	$ 1,402	$ 11,880	$ 3,664

+ References + Details

Cover - Condensed Consolidated Statements of Comprehensive Loss

Condensed Consolidated Statements of Comprehensive Loss - USD ($) $ in Thousands	XBRL Details					3 Months Ended		9 Months Ended	
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Sep. 30, 2020	Sep. 30, 2021	Sep. 30, 2020
Statement of Comprehensive Income [Abstract]	us-gaap_StatementOfIncomeAndComprehensiveIncomeAbstract	us-gaap_	xbrli:stringItemType	na	duration				
Net loss	us-gaap_NetIncomeLoss	us-gaap_	xbrli:monetaryItemType	credit	duration	$ (198,176)	$ (102,902)	$ (173,882)	$ (367,832)
Other comprehensive income (loss):	us-gaap_OtherComprehensiveIncomeLossNetOfTaxPeriodIncreaseDecreaseAbstract	us-gaap_	xbrli:stringItemType	na	duration				
Unrealized income (loss) on available-for-sale marketable securities, net of tax	us-gaap_OtherComprehensiveIncomeLossAvailableForSaleSecuritiesAdjustmentNetOfTax	us-gaap_	xbrli:monetaryItemType	credit	duration	(13)	(373)	20	208
Comprehensive loss	us-gaap_ComprehensiveIncomeNetOfTax	us-gaap_	xbrli:monetaryItemType	credit	duration	$ (198,189)	$ (103,275)	$ (173,862)	$ (367,624)

+ References + Details

Cover - Condensed Consolidated Statements of Stockholders' Equity

Condensed Consolidated Statements of Stockholders' Equity - USD ($) $ in Thousands	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Total	Common stock:	Accumulated other comprehensive income (loss):	Additional paid-in capital:	Additional paid-in capital: Cumulative effect of adoption of ASU 2020-06	Accumulated deficit:	Accumulated deficit: Cumulative effect of adoption of ASU 2020-06	Adjustment Additional paid-in capital:
Balance, beginning of period at Dec. 31, 2019	us-gaap_StockholdersEquity	us-gaap_	xbrli:monetaryItemType	credit	instant		$ 10	$ (9)	$ 1,138,316		$ (758,677)		
Balance, beginning of period (Reclassification of stock payable liabilities) at Dec. 31, 2019	us-gaap_StockholdersEquity	us-gaap_	xbrli:monetaryItemType	credit	instant								$ (10,387)
Increase (Decrease) in Stockholders' Equity [Roll Forward]	us-gaap_IncreaseDecreaseInStockholdersEquityRollForward	us-gaap_	xbrli:stringItemType	na	duration								
Common stock issued	us-gaap_StockIssuedDuringPeriodValueNewIssues	us-gaap_	xbrli:monetaryItemType	credit	duration		3		217,486				
Unrealized income (loss) on available-for-sale marketable securities, net of tax	us-gaap_OtherComprehensiveIncomeLossAvailableForSaleSecuritiesAdjustmentNetOfTax	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 208		208					
Common stock issued on exercise of stock options, net	us-gaap_StockIssuedDuringPeriodValueStockOptionsExercisedNetOfTaxBenefitExpense	us-gaap_	xbrli:monetaryItemType	credit	duration				4,163				
Common stock issued pursuant to exercises of warrants	nvta_StockIssuedDuringPeriodValueWarrantsExercised	nvta_	xbrli:monetaryItemType	credit	duration				386				
Common stock issued pursuant to employee stock purchase plan	us-gaap_StockIssuedDuringPeriodValueEmployeeStockPurchasePlan	us-gaap_	xbrli:monetaryItemType	credit	duration				4,527				
Common stock issued or issuable pursuant to acquisitions	us-gaap_StockIssuedDuringPeriodValueAcquisitions	us-gaap_	xbrli:monetaryItemType	credit	duration				134,445				
Stock-based compensation expense	us-gaap_AdjustmentsToAdditionalPaidInCapitalSharebasedCompensationRequisiteServicePeriodRecognitionValue	us-gaap_	xbrli:monetaryItemType	credit	duration				53,912				
Net loss	us-gaap_NetIncomeLoss	us-gaap_	xbrli:monetaryItemType	credit	duration	(367,832)					(367,832)		
Balance, end of period at Sep. 30, 2020	us-gaap_StockholdersEquity	us-gaap_	xbrli:monetaryItemType	credit	instant	$ 416,551	13	199	1,542,848		(1,126,509)		
Increase (Decrease) in Stockholders' Equity [Roll Forward]	us-gaap_IncreaseDecreaseInStockholdersEquityRollForward	us-gaap_	xbrli:stringItemType	na	duration								
Accounting Standards Update [Extensible Enumeration]	us-gaap_AccountingStandardsUpdateExtensibleList	us-gaap_	enum2:enumerationSetItemType	na	duration	Accounting Standards Update 2020-06 [Member]							
Balance, beginning of period at Dec. 31, 2019	us-gaap_StockholdersEquity	us-gaap_	xbrli:monetaryItemType	credit	instant		10	(9)	1,138,316		(758,677)		
Balance, beginning of period (Reclassification of stock payable liabilities) at Dec. 31, 2019	us-gaap_StockholdersEquity	us-gaap_	xbrli:monetaryItemType	credit	instant								$ (10,387)
Balance, end of period at Dec. 31, 2020	us-gaap_StockholdersEquity	us-gaap_	xbrli:monetaryItemType	credit	instant	$ 1,976,293	19	1	3,337,120	$ (75,488)	(1,360,847)	$ 17,005	
Balance, beginning of period at Jun. 30, 2020	us-gaap_StockholdersEquity	us-gaap_	xbrli:monetaryItemType	credit	instant		13	572	1,487,217		(1,023,607)		
Increase (Decrease) in Stockholders' Equity [Roll Forward]	us-gaap_IncreaseDecreaseInStockholdersEquityRollForward	us-gaap_	xbrli:stringItemType	na	duration								
Unrealized income (loss) on available-for-sale marketable securities, net of tax	us-gaap_OtherComprehensiveIncomeLossAvailableForSaleSecuritiesAdjustmentNetOfTax	us-gaap_	xbrli:monetaryItemType	credit	duration	(373)		(373)					
Common stock issued on exercise of stock options, net	us-gaap_StockIssuedDuringPeriodValueStockOptionsExercisedNetOfTaxBenefitExpense	us-gaap_	xbrli:monetaryItemType	credit	duration				1,992				
Common stock issued pursuant to exercises of warrants	nvta_StockIssuedDuringPeriodValueWarrantsExercised	nvta_	xbrli:monetaryItemType	credit	duration				324				
Common stock issued or issuable pursuant to acquisitions	us-gaap_StockIssuedDuringPeriodValueAcquisitions	us-gaap_	xbrli:monetaryItemType	credit	duration				31,939				
Stock-based compensation expense	us-gaap_AdjustmentsToAdditionalPaidInCapitalSharebasedCompensationRequisiteServicePeriodRecognitionValue	us-gaap_	xbrli:monetaryItemType	credit	duration				21,376				
Net loss	us-gaap_NetIncomeLoss	us-gaap_	xbrli:monetaryItemType	credit	duration	(102,902)					(102,902)		
Balance, end of period at Sep. 30, 2020	us-gaap_StockholdersEquity	us-gaap_	xbrli:monetaryItemType	credit	instant	416,551	13	199	1,542,848		(1,126,509)		
Balance, beginning of period at Dec. 31, 2020	us-gaap_StockholdersEquity	us-gaap_	xbrli:monetaryItemType	credit	instant	1,976,293	19	1	3,337,120	$ (75,488)	(1,360,847)	$ 17,005	
Increase (Decrease) in Stockholders' Equity [Roll Forward]	us-gaap_IncreaseDecreaseInStockholdersEquityRollForward	us-gaap_	xbrli:stringItemType	na	duration								
Common stock issued	us-gaap_StockIssuedDuringPeriodValueNewIssues	us-gaap_	xbrli:monetaryItemType	credit	duration		4		434,263				
Unrealized income (loss) on available-for-sale marketable securities, net of tax	us-gaap_OtherComprehensiveIncomeLossAvailableForSaleSecuritiesAdjustmentNetOfTax	us-gaap_	xbrli:monetaryItemType	credit	duration	20		20					
Common stock issued on exercise of stock options, net	us-gaap_StockIssuedDuringPeriodValueStockOptionsExercisedNetOfTaxBenefitExpense	us-gaap_	xbrli:monetaryItemType	credit	duration				8,167				
Common stock issued pursuant to exercises of warrants	nvta_StockIssuedDuringPeriodValueWarrantsExercised	nvta_	xbrli:monetaryItemType	credit	duration				1,242				
Common stock issued pursuant to employee stock purchase plan	us-gaap_StockIssuedDuringPeriodValueEmployeeStockPurchasePlan	us-gaap_	xbrli:monetaryItemType	credit	duration				6,400				
Common stock issued or issuable pursuant to acquisitions	us-gaap_StockIssuedDuringPeriodValueAcquisitions	us-gaap_	xbrli:monetaryItemType	credit	duration				783,877				
Stock-based compensation expense	us-gaap_AdjustmentsToAdditionalPaidInCapitalSharebasedCompensationRequisiteServicePeriodRecognitionValue	us-gaap_	xbrli:monetaryItemType	credit	duration				128,816				
Net loss	us-gaap_NetIncomeLoss	us-gaap_	xbrli:monetaryItemType	credit	duration	(173,882)					(173,882)		
Balance, end of period at Sep. 30, 2021	us-gaap_StockholdersEquity	us-gaap_	xbrli:monetaryItemType	credit	instant	3,106,717	23	21	4,624,397		(1,517,724)		
Balance, beginning of period at Jun. 30, 2021	us-gaap_StockholdersEquity	us-gaap_	xbrli:monetaryItemType	credit	instant		20	34	3,973,479		(1,319,548)		
Increase (Decrease) in Stockholders' Equity [Roll Forward]	us-gaap_IncreaseDecreaseInStockholdersEquityRollForward	us-gaap_	xbrli:stringItemType	na	duration								
Common stock issued	us-gaap_StockIssuedDuringPeriodValueNewIssues	us-gaap_	xbrli:monetaryItemType	credit	duration		3						
Unrealized income (loss) on available-for-sale marketable securities, net of tax	us-gaap_OtherComprehensiveIncomeLossAvailableForSaleSecuritiesAdjustmentNetOfTax	us-gaap_	xbrli:monetaryItemType	credit	duration	(13)		(13)					
Common stock issued on exercise of stock options, net	us-gaap_StockIssuedDuringPeriodValueStockOptionsExercisedNetOfTaxBenefitExpense	us-gaap_	xbrli:monetaryItemType	credit	duration				5,215				
Common stock issued or issuable pursuant to acquisitions	us-gaap_StockIssuedDuringPeriodValueAcquisitions	us-gaap_	xbrli:monetaryItemType	credit	duration				620,001				
Stock-based compensation expense	us-gaap_AdjustmentsToAdditionalPaidInCapitalSharebasedCompensationRequisiteServicePeriodRecognitionValue	us-gaap_	xbrli:monetaryItemType	credit	duration				25,702				
Net loss	us-gaap_NetIncomeLoss	us-gaap_	xbrli:monetaryItemType	credit	duration	(198,176)					(198,176)		
Balance, end of period at Sep. 30, 2021	us-gaap_StockholdersEquity	us-gaap_	xbrli:monetaryItemType	credit	instant	$ 3,106,717	$ 23	$ 21	$ 4,624,397		$ (1,517,724)		

+ References + Details

Cover - Condensed Consolidated Statements of Cash Flows

Condensed Consolidated Statements of Cash Flows - USD ($) $ in Thousands	XBRL Details					9 Months Ended	
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Sep. 30, 2020
Cash flows from operating activities:	us-gaap_NetCashProvidedByUsedInOperatingActivitiesAbstract	us-gaap_	xbrli:stringItemType	na	duration		
Net loss	us-gaap_NetIncomeLoss	us-gaap_	xbrli:monetaryItemType	credit	duration	$ (173,882)	$ (367,832)
Adjustments to reconcile net loss to net cash used in operating activities:	us-gaap_AdjustmentsToReconcileNetIncomeLossToCashProvidedByUsedInOperatingActivitiesAbstract	us-gaap_	xbrli:stringItemType	na	duration		
Depreciation and amortization	us-gaap_DepreciationDepletionAndAmortization	us-gaap_	xbrli:monetaryItemType	debit	duration	56,848	22,964
Stock-based compensation	us-gaap_ShareBasedCompensation	us-gaap_	xbrli:monetaryItemType	debit	duration	131,768	102,329
Amortization of debt discount and issuance costs	us-gaap_AmortizationOfFinancingCostsAndDiscounts	us-gaap_	xbrli:monetaryItemType	debit	duration	10,352	11,115
Remeasurements of liabilities associated with business combinations	nvta_BusinessCombinationRemeasurementOfLiabilities	nvta_	xbrli:monetaryItemType	debit	duration	(396,015)	42,448
Benefit from income taxes	us-gaap_DeferredIncomeTaxExpenseBenefit	us-gaap_	xbrli:monetaryItemType	debit	duration	(29,215)	(2,600)
Post-combination expense	nvta_ShareBasedPaymentArrangementNoncashExpenseAccelerationOfUnvestedEquity	nvta_	xbrli:monetaryItemType	debit	duration	7,870	0
Other	us-gaap_OtherNoncashIncomeExpense	us-gaap_	xbrli:monetaryItemType	credit	duration	7,336	(570)
Changes in operating assets and liabilities, net of businesses acquired:	us-gaap_IncreaseDecreaseInOperatingCapitalAbstract	us-gaap_	xbrli:stringItemType	na	duration		
Accounts receivable	us-gaap_IncreaseDecreaseInAccountsReceivable	us-gaap_	xbrli:monetaryItemType	credit	duration	(8,900)	5,516
Inventory	us-gaap_IncreaseDecreaseInInventories	us-gaap_	xbrli:monetaryItemType	credit	duration	1,397	0
Prepaid expenses and other current assets	nvta_IncreaseDecreaseInPrepaidExpenseAndOtherCurrentAssets	nvta_	xbrli:monetaryItemType	credit	duration	(15,273)	(8,460)
Other assets	us-gaap_IncreaseDecreaseInOtherOperatingAssets	us-gaap_	xbrli:monetaryItemType	credit	duration	(2,915)	1,387
Accounts payable	us-gaap_IncreaseDecreaseInAccountsPayable	us-gaap_	xbrli:monetaryItemType	debit	duration	2,581	3,118
Accrued expenses and other long-term liabilities	us-gaap_IncreaseDecreaseInAccruedLiabilitiesAndOtherOperatingLiabilities	us-gaap_	xbrli:monetaryItemType	debit	duration	24,151	5,665
Net cash used in operating activities	us-gaap_NetCashProvidedByUsedInOperatingActivities	us-gaap_	xbrli:monetaryItemType	na	duration	(383,897)	(184,920)
Cash flows from investing activities:	us-gaap_NetCashProvidedByUsedInInvestingActivitiesAbstract	us-gaap_	xbrli:stringItemType	na	duration		
Purchases of marketable securities	us-gaap_PaymentsToAcquireAvailableForSaleSecuritiesDebt	us-gaap_	xbrli:monetaryItemType	credit	duration	(325,957)	(180,021)
Proceeds from sales of marketable securities	us-gaap_ProceedsFromSaleOfAvailableForSaleSecuritiesDebt	us-gaap_	xbrli:monetaryItemType	debit	duration	0	12,832
Proceeds from maturities of marketable securities	us-gaap_ProceedsFromMaturitiesPrepaymentsAndCallsOfAvailableForSaleSecurities	us-gaap_	xbrli:monetaryItemType	debit	duration	228,043	152,465
Acquisition of businesses, net of cash acquired	us-gaap_PaymentsToAcquireBusinessesNetOfCashAcquired	us-gaap_	xbrli:monetaryItemType	credit	duration	(239,836)	(57,576)
Purchases of property and equipment	us-gaap_PaymentsToAcquirePropertyPlantAndEquipment	us-gaap_	xbrli:monetaryItemType	credit	duration	(35,533)	(13,991)
Other	us-gaap_PaymentsForProceedsFromOtherInvestingActivities	us-gaap_	xbrli:monetaryItemType	credit	duration	(1,300)	(2,000)
Net cash used in investing activities	us-gaap_NetCashProvidedByUsedInInvestingActivities	us-gaap_	xbrli:monetaryItemType	debit	duration	(374,583)	(88,291)
Cash flows from financing activities:	us-gaap_NetCashProvidedByUsedInFinancingActivitiesAbstract	us-gaap_	xbrli:stringItemType	na	duration		
Proceeds from public offerings of common stock, net	nvta_ProceedsFromIssuanceOfPublicOfferingsOfCommonStockNetOfIssuanceCosts	nvta_	xbrli:monetaryItemType	debit	duration	434,263	217,489
Proceeds from issuance of common stock	us-gaap_ProceedsFromIssuanceOfCommonStock	us-gaap_	xbrli:monetaryItemType	debit	duration	15,810	9,076
Proceeds from issuance of convertible senior notes, net	us-gaap_ProceedsFromConvertibleDebt	us-gaap_	xbrli:monetaryItemType	debit	duration	1,116,427	0
Finance lease principal payments	us-gaap_FinanceLeasePrincipalPayments	us-gaap_	xbrli:monetaryItemType	credit	duration	(2,833)	(1,543)
Other	us-gaap_ProceedsFromPaymentsForOtherFinancingActivities	us-gaap_	xbrli:monetaryItemType	debit	duration	(4,758)	3,738
Net cash provided by financing activities	us-gaap_NetCashProvidedByUsedInFinancingActivities	us-gaap_	xbrli:monetaryItemType	debit	duration	1,558,909	228,760
Net increase (decrease) in cash, cash equivalents and restricted cash	us-gaap_CashCashEquivalentsRestrictedCashAndRestrictedCashEquivalentsPeriodIncreaseDecreaseIncludingExchangeRateEffect	us-gaap_	xbrli:monetaryItemType	debit	duration	800,429	(44,451)
Cash, cash equivalents and restricted cash at beginning of period	us-gaap_CashCashEquivalentsRestrictedCashAndRestrictedCashEquivalents	us-gaap_	xbrli:monetaryItemType	debit	instant	131,480	157,572
Cash, cash equivalents and restricted cash at end of period	us-gaap_CashCashEquivalentsRestrictedCashAndRestrictedCashEquivalents	us-gaap_	xbrli:monetaryItemType	debit	instant	931,909	113,121
Supplemental cash flow information of non-cash investing and financing activities:	us-gaap_CashFlowNoncashInvestingAndFinancingActivitiesDisclosureAbstract	us-gaap_	xbrli:stringItemType	na	duration		
Equipment acquired through finance leases	us-gaap_RightOfUseAssetObtainedInExchangeForFinanceLeaseLiability	us-gaap_	xbrli:monetaryItemType	debit	duration	7,736	1,971
Purchases of property and equipment in accounts payable and accrued liabilities	us-gaap_CapitalExpendituresIncurredButNotYetPaid	us-gaap_	xbrli:monetaryItemType	credit	duration	12,513	3,576
Common stock issued for acquisition of businesses	us-gaap_StockIssued1	us-gaap_	xbrli:monetaryItemType	credit	duration	782,477	82,185
Operating lease assets obtained in exchange for lease obligations, net	us-gaap_RightOfUseAssetObtainedInExchangeForOperatingLeaseLiability	us-gaap_	xbrli:monetaryItemType	debit	duration	$ 82,138	$ 6,157

+ References + Details

Cover - Organization and description of business

Organization and description of business	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Organization, Consolidation and Presentation of Financial Statements [Abstract]	us-gaap_OrganizationConsolidationAndPresentationOfFinancialStatementsAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Organization and description of business	us-gaap_OrganizationConsolidationBasisOfPresentationBusinessDescriptionAndAccountingPoliciesTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	Organization and description of business Invitae Corporation ("Invitae," "the Company," "we," "us," and "our") was incorporated in the State of Delaware on January 13, 2010, as Locus Development, Inc. and we changed our name to Invitae Corporation in 2012. We offer high-quality, comprehensive, affordable genetic testing across multiple clinical areas, including hereditary cancer, cardiology, neurology, pediatrics, personalized oncology, metabolic conditions and rare diseases. To augment our offering and realize our mission, we have acquired multiple assets and businesses that further expanded our test menu and suite of genome management offerings and accelerated our entry into key genomics markets. Invitae operates in one segment. ***Basis of presentation*** The accompanying unaudited condensed consolidated financial statements have been prepared in accordance with U.S. generally accepted accounting principles ("U.S. GAAP") for interim financial information and in accordance with the instructions to Form 10-Q and Rule 10-01 of Regulation S-X. Accordingly, they do not include all of the information and footnotes required by generally accepted accounting principles for complete financial statements. The unaudited interim condensed consolidated financial statements have been prepared on the same basis as the annual

financial statements. In the opinion of management, the accompanying unaudited condensed consolidated financial statements reflect all adjustments (consisting only of normal recurring adjustments) considered necessary for a fair presentation. The information included in this Quarterly Report on Form 10-Q should be read in conjunction with the audited financial statements and notes thereto included in our Annual Report on Form 10-K for the year ended December 31, 2020. The results for the three and nine months ended September 30, 2021 are not necessarily indicative of the results expected for the full fiscal year or any other periods.

+ Details

Cover - Summary of significant accounting policies

Summary of significant accounting policies	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Accounting Policies [Abstract]	us-gaap_AccountingPoliciesAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Summary of significant accounting policies	us-gaap_SignificantAccountingPoliciesTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	Summary of significant accounting policies

Principles of consolidation

Our unaudited condensed consolidated financial statements include our accounts and the accounts of our wholly-owned subsidiaries. All intercompany balances and transactions have been eliminated in consolidation.

Use of estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make judgments, estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent liabilities as of the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. We base these estimates on current facts, historical and anticipated results, trends and various other assumptions that we believe are reasonable under the circumstances, including assumptions as to future events. Actual results could differ materially from those judgments, estimates and assumptions. We evaluate our estimates on an ongoing basis.

Concentrations of credit risk and other risks and uncertainties

Financial instruments that potentially subject us to a concentration of credit risk consist of cash, cash equivalents, restricted cash, marketable securities and accounts receivable. Our cash and cash equivalents are primarily held by financial institutions in the United States. Such deposits may exceed federally insured limits.

Cash, cash equivalents and restricted cash

The following table provides a reconciliation of cash, cash equivalents and restricted cash reported within the consolidated balance sheets that sum to the total of the same amounts shown in the consolidated statements of cash flows (in thousands):

	September 30, 2021	December 31, 2020
Cash and cash equivalents	$ 921,634	$124,794
Restricted cash	10,275	6,686
Total cash, cash equivalents and restricted cash	$ 931,909	$131,480

The restricted cash is related to security deposits on our leases.

Fair value of financial instruments

Our financial instruments consist principally of cash and cash equivalents, marketable securities, accounts payable, accrued liabilities, finance leases and liabilities associated with business combinations. The carrying amounts of certain of these financial instruments, including cash and cash equivalents, accounts receivable, accounts payable and accrued and other current liabilities approximate their current fair value due to the relatively short-term nature of these accounts. Based on borrowing rates available to us, the carrying value of our finance leases approximate their fair values. Liabilities associated with business combinations are recorded at their estimated fair value.

Prior period reclassifications

We have reclassified certain amounts in prior periods to conform with current presentation. During the

current period, we have disclosed the change in fair value of our contingent consideration separately in our statements of operations; these amounts are general and administrative in nature and were disclosed in general and administrative expense previous periods.

Recent accounting pronouncements

We evaluate all Accounting Standards Updates (“ASUs”) issued by the Financial Accounting Standards Board ("FASB") for consideration of their applicability. ASUs not included in the disclosures in this report were assessed and determined to be either not applicable or are not expected to have a material impact on our consolidated financial statements.

Recently adopted accounting pronouncements

In August 2020, the FASB issued ASU 2020-06, *Accounting for Convertible Instruments and Contracts in an Entity's Own Equity*, which simplifies the accounting for certain convertible instruments, amends the guidance on derivative scope exceptions for contracts in an entity's own equity, and modifies the guidance on diluted earnings per share calculations as a result of these changes. This new standard is effective for our interim and annual periods beginning January 1, 2022, and earlier adoption is permitted. We elected to adopt the amendments on a modified retrospective basis effective January 1, 2021, which required a cumulative-effect adjustment to retained earnings. The cumulative-effect adjustment resulted in a decrease in accumulated deficit of $17.0 million related to the reversal of the equity component and associated issuance costs as well as adjustment of the related amortization costs of our existing convertible senior notes due in 2024. Reporting periods beginning on or after January 1, 2021 are presented under this new guidance while prior periods have not been adjusted and continue to be reported in accordance with our historic accounting under GAAP. See further information about our Senior Convertible Notes in Note 8, “Commitments and contingencies.”

+ Details

Cover - Revenue, accounts receivable and deferred revenue

Revenue, accounts receivable and deferred revenue	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Revenue from Contract with Customer [Abstract]	us-gaap_RevenueFromContractWithCustomerAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Revenue, accounts receivable and deferred revenue	us-gaap_RevenueFromContractWithCustomerTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	Revenue, accounts receivable and deferred revenueTest revenue is generated from sales of diagnostic tests and precision oncology products to four groups of customers: biopharmaceutical partners, patients who pay directly, patients' insurance carriers, and other business-to-business customers (e.g., hospitals, clinics, medical centers). Test revenue is generated in two ways: through a centralized lab and decentralized through the shipment of reactions to biopharmaceutical partners and other business-to-business customers. We refer to the set of reagents needed to perform a next-generation sequencing test as a "reaction." Amounts billed and collected, and the timing of collections, vary based on the type of payer. Other revenue consists principally of revenue recognized under contracts for biopharmaceutical development services and other collaboration and genome network agreements and is accounted for under the provisions provided in Accounting Standards Codification ("ASC") 606, *Revenue from Contracts with Customers*. Our revenue as disaggregated by payer category and revenue subtype was as follows (in thousands):

Three Months Ended September 30, 2021

	Patient		Biopharma partner	Other business-to-business	Total
	Insurance	Direct			
Test revenue:					
Centralized	$ 69,009	$ 10,999	$ 10,390	$ 12,591	$ 102,989
Decentralized	—	—	374	8,313	8,687
Total test revenue	69,009	10,999	10,764	20,904	111,676
Other revenue	—	—	1,774	945	2,719
Total revenue	$ 69,009	$ 10,999	$ 12,538	$ 21,849	$ 114,395

Three Months Ended September 30, 2020

	Patient		Biopharma partner	Other business-to-business	Total
	Insurance	Direct			
Test revenue:					
Centralized	$ 46,932	$ 6,379	$ 5,287	$ 8,728	$ 67,326
Total test revenue	46,932	6,379	5,287	8,728	67,326
Other revenue	—	—	848	554	1,402
Total revenue	$ 46,932	$ 6,379	$ 6,135	$ 9,282	$ 68,728

Nine Months Ended September 30, 2021

	Patient		Biopharma partner	Other business-to-business	Total
	Insurance	Direct			
Test revenue:					
Centralized	$ 201,154	$ 30,471	$ 29,650	$ 34,939	$ 296,214
Decentralized	—	—	1,011	25,223	26,234
Total test revenue	201,154	30,471	30,661	60,162	322,448
Other revenue	—	—	8,394	3,486	11,880
Total revenue	$ 201,154	$ 30,471	$ 39,055	$ 63,648	$ 334,328

Nine Months Ended September 30, 2020

	Patient		Biopharma partner	Other business-to-business	Total
	Insurance	Direct			
Test revenue:					
Centralized	$ 121,993	$ 16,468	$ 13,887	$ 23,155	$ 175,503
Total test revenue	121,993	16,468	13,887	23,155	175,503
Other revenue	—	—	1,777	1,887	3,664
Total revenue	$ 121,993	$ 16,468	$ 15,664	$ 25,042	$ 179,167

We recognize revenue related to billings based on estimates of the amount that will ultimately be realized. Cash collections for certain tests delivered may differ from rates originally estimated. We update our estimate of the amounts to be recognized based on new information evaluated on a quarterly basis. Updates to our estimates resulted in the following changes to revenue, loss from operations and basic and diluted net loss per share (in millions, except per share amounts):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2021	2020	2021	2020
Revenue	$ 4.0	$ 0.7	$ 12.0	$ 3.0
Loss from operations	$ (4.0)	$ (0.7)	$ (12.0)	$ (3.0)
Net loss per share, basic and diluted	$ (0.02)	$ (0.01)	$ (0.06)	$ (0.03)

Impact of COVID-19

Our billable volumes decreased significantly in the second half of March 2020 as compared to the first few months of 2020 as a result of COVID-19 and related limitations and priorities across the healthcare system. Our daily test volumes have recovered from the low in March 2020, although the current COVID-19 pandemic continues to impact our business operations and practices. While we expect that it may continue to impact our business, we experienced limited disruption during the third quarter of 2021. We have reviewed and adjusted, when necessary, for the impact of COVID-19 on our estimates related to revenue recognition and expected credit losses.

In March 2020, the Coronavirus Aid, Relief, and Economic Security Act ("CARES Act") was signed into law as a stimulus bill intended to bolster the economy, among other things, and provide assistance to qualifying businesses and individuals. The CARES Act included an infusion of funds into the healthcare system; in April 2020, we received $3.8 million as a part of this initiative, and in January 2021, we received an additional $2.3 million. These payments were recognized as other income, net in our consolidated statement of operations in the periods received. At this time, we are not certain of the availability, extent or impact of any future relief provided under the CARES Act.

Accounts receivable

The majority of our accounts receivable represents amounts billed to biopharmaceutical partners and other business-to-business customers for test and other revenue recognized, and estimated amounts to be collected from third-party insurance payers for genetic testing revenue recognized. Also included are amounts due under the terms of collaboration and genome network agreements for diagnostic testing and data aggregation reporting services provided and proprietary platform access rights transferred.

We also record unbilled revenue for revenue recognized but yet to be billed for services provided to biopharmaceutical companies related to companion diagnostic development. This contract receivable was $3.7 million and $4.3 million as of September 30, 2021 and December 31, 2020, respectively, and was included in prepaid expenses and other current assets on the consolidated balance sheets.

Deferred revenue

We record a contract liability when cash payments are received or due in advance of our performance related to one or more performance obligations. The deferred revenue balance primarily consists of advanced billings for biopharmaceutical development services, including billings at the initiation of performance-based milestones, and recognized as revenue in the applicable future period when the revenue is earned. Also included are prepayments related to our consumer direct channel. During the three and nine months ended September 30, 2021, we recognized revenue from deferred revenue recorded in prior periods of $2.3 million and $2.7 million, respectively.

+ Details

Cover - Business combinations

Business combinations	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Business Combination and Asset Acquisition [Abstract]	us-gaap_BusinessCombinationAndAssetAcquisitionAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Business combinations						Business combinations

Singular Bio

In June 2019, we acquired 100% of the fully diluted equity of Singular Bio, Inc. ("Singular Bio"), a privately held company developing single molecule detection technology, for approximately $57.3 million, comprised of $53.9 million in the form of 2.5 million shares of our common stock and the remainder in cash.

In June 2019, we granted approximately $90.0 million of restricted stock units ("RSU") under our 2015 Stock Incentive Plan as inducement awards to new employees who joined Invitae in connection with our acquisition of Singular Bio. $45.0 million of the RSUs are time-based and vested in three equal installments in December 2019, June 2020, and December 2020, subject to the employee's continued service with us ("Time-based RSUs") and $45.0 million of the RSUs are performance-based RSUs ("PRSUs") that vest upon the achievement of certain performance conditions. Since the number of awards granted is based on a 30-day volume weighted-average share price with a fixed dollar value, these Time-based RSUs and PRSUs are liability-classified and the fair value is estimated at each reporting period based on the number of shares that are expected to be issued at each reporting date and our closing stock price, which combined are categorized as Level 3 inputs. Therefore, fair value of these awards and the number of shares issued are not fixed until the awards vest.

During the three and nine months ended September 30, 2021, we recorded research and development stock-based compensation expense of nil related to the Time-based RSUs, and income of $0.7 million and expense of $1.2 million, respectively, related to the PRSUs based on our evaluation of the probability of achieving performance conditions, primarily due to the change in value of our common stock. During the three and nine months ended September 30, 2020, we recorded research and development stock-based compensation expense of $6.3 million and $24.9 million, respectively, related to the Time-based RSUs and $6.5 million and $23.6 million, respectively, related to the PRSUs. As of September 30, 2021, there was no remaining liability related to the Singular Bio transaction.

Jungla

In July 2019, we acquired 100% of the equity interest of Jungla Inc. ("Jungla"), a privately held company developing a platform for molecular evidence testing in genes, for approximately $59.0 million, comprised of $44.9 million in the form of shares of our common stock and the remainder in cash.

We may be required to pay contingent consideration based on achievement of post-closing development milestones. As of the acquisition date, the fair value of this contingent consideration was $10.7 million including cash and common stock. The material factors that may impact the fair value of the contingent consideration, and therefore, this liability, are the probabilities and timing of achieving the related milestones and the discount rate used to estimate the fair value. Significant changes in any of the probabilities of success would result in a significant change in the fair value, which is estimated at each reporting date with changes reflected as a general and administrative expense. The remaining milestone was achieved in July 2021 and the fair value of the contingent consideration was reduced from $3.6 million as of June 30, 2021 to zero as of September 30, 2021.

Diploid

In March 2020, we acquired 100% of the equity interest of Orbicule BV ("Diploid"), a developer of artificial intelligence software capable of diagnosing genetic disorders using sequencing data and patient information, for approximately $82.3 million in cash and shares of our common stock. Of the stock purchase price consideration issued, approximately 0.4 million shares were subject to a hold-back to satisfy indemnification obligations that may arise. In September 2021, the amounts held back to satisfy indemnification obligations for Diploid were released in full to the former shareholders.

Genelex and YouScript

In April 2020, we acquired 100% of the equity interest of Genelex Solutions, LLC ("Genelex") and YouScript Incorporated ("YouScript") to bring pharmacogenetic testing and integrated clinical decision support to Invitae. We acquired Genelex for approximately $13.2 million, primarily in shares of our common stock. Of the stock purchase price consideration issued, approximately 0.1 million shares were subject to a hold-back to satisfy indemnification obligations that may arise. We acquired YouScript for approximately $52.7 million, including cash consideration of $24.5 million and the remainder in shares of our common stock. Of the purchase price consideration for YouScript, approximately $1.4 million and 0.5 million shares of our common stock were subject to a hold-back to satisfy indemnification obligations that may arise.

As of the acquisition date, we recorded stock payable liabilities of $6.2 million to represent the hold-back obligation to issue shares subject to indemnification claims that may arise. These liabilities are adjusted at each reporting period based on the fair value of our common stock, which is a Level 3 input. In April 2021, the amounts held back to satisfy indemnification obligations for Genelex were released in full to the former shareholders. As of September 30, 2021, the value of this liability was $6.5 million related to YouScript with the $1.3 million quarterly change recorded in other income (expense), net.

We may be required to pay contingent consideration in the form of additional shares of our common stock in connection with the acquisition of Genelex if, within a specified period following the closing, we achieve a certain product milestone, in which case we would issue shares of our common stock with a value equal to a portion of the gross revenues actually received by us for a pharmacogenetic product reimbursed through certain payers during an earn-out period of up to four years. As of the acquisition date, the fair value of this contingent consideration was $2.0 million. The material factors that may impact the fair value of the contingent consideration, and therefore, this liability, are the probabilities and timing of achieving the related milestone, the estimated revenues achieved for a pharmacogenetic product and the discount rate used to estimate the fair value. Significant changes in any of the probabilities of success would result in a significant change in the fair value, which is estimated at each reporting date. As of September 30, 2021, the fair value of this contingent consideration was $1.7 million.

ArcherDX

In October 2020, we acquired ArcherDX, Inc. ("ArcherDX"), a genomics analysis company democratizing precision oncology. Under the terms of the agreement, we acquired ArcherDX for upfront consideration consisting of 30.0 million shares of our common stock and $325.0 million in cash, plus up to an additional 27.0 million

shares of our common stock payable in connection with the achievement of certain milestones. During the three months ended March 31, 2021, Invitae and the sellers of ArcherDX reached an agreement to reduce the purchase price by $1.2 million based on the final acquired net working capital. This adjustment was recorded during the three months ended March 31, 2021 and reduced the contingent consideration liability and goodwill by approximately $1.2 million.

Our purchase price allocation for the acquisition is preliminary and subject to revision as additional information about fair value of assets and liabilities becomes available, primarily related to our deferred tax liability assumed in connection with the acquisition. Additional information that existed as of the acquisition date but at the time was unknown to us may become known to us during the remainder of the measurement period, a period not to exceed 12 months from the acquisition date.

We may be required to pay contingent consideration based on achievement of post-closing development and revenue milestones. As of the acquisition date, the total fair value of the contingent consideration was $945.2 million. Of the five milestones, one milestone was achieved in November 2020, which resulted in the issuance of 5.0 million shares of our common stock and a cash payment of $1.9 million, and three milestones were achieved or deemed to be achieved during the three months ended June 30, 2021, which resulted in the issuance of 13.8 million shares of our common stock and a cash payment of $3.3 million in July 2021. The remaining milestone is based upon receiving U.S. Food and Drug Administration ("FDA") clearance or approval of STRATAFIDE, which per the terms of the acquisition agreement, must be completed by March 31, 2022, subject to certain extensions (the "ArcherDX Final Milestone"). The material factors that may impact the fair value of the contingent consideration, and therefore the liability, are (i) the estimated number of shares to be issued, (ii) the volatility of our common stock, (iii) the probabilities of achievement of milestones within the timeframes prescribed in the acquisition agreement and (iv) discount rates, all of which are Level 3 inputs not supported by market activity. Significant changes in any of these inputs may result in a significant change in fair value, which is estimated at each reporting date. As of December 31, 2020, the fair value of the contingent consideration related to ArcherDX was $788.3 million. With respect to the ArcherDX Final Milestone, the liability has been reduced to zero as of June 30, 2021 from $262.5 million as of March 31, 2021 and $287.7 million as of December 31, 2020, with the offsetting change recorded as changes in fair value of contingent consideration in our consolidated statements of operations. The removal of the liability balance and the associated change in fair value of contingent consideration was a result of our reassessment of the steps necessary to achieve clearance or approval based on FDA feedback received principally in the three months ended June 30, 2021. As a result of our reassessment, we do not believe achievement of the conditions will occur prior to the expiry date for achievement under the timeframe prescribed in the acquisition agreement. We expect FDA clearance or approval of STRATAFIDE at a later date upon resolution of the necessary steps.

In connection with the acquisition, we granted awards of Invitae common stock to new employees who joined Invitae in connection with our acquisition of ArcherDX that vest upon the achievement of the contingent consideration milestones discussed above and are subject to the employee's continued service with us, unless terminated without cause in which case vesting is only dependent on milestone achievement. As the number of shares that are expected to be issued are fixed, the awards are equity-classified. During the nine months ended September 30, 2021, we recorded a net $41.8 million in stock-based compensation expense related to the ArcherDX milestones, which includes $38.5 million related to milestones achieved in prior periods, $33.0 million due to an accounting modification of certain awards whereby the employees' continued substantive services were no longer required, offset by a reversal of $29.7 million recognized in prior periods related to the determination that the ArcherDX Final Milestone will not be achieved within the specified timeframe prescribed in the acquisition agreement.

One Codex

In February 2021, we acquired 100% of the equity interest of Reference Genomics, Inc. d/b/a One Codex ("One Codex"), a company developing and commercializing products and services relating to microbiome sequencing, analysis and reporting, for upfront consideration consisting of $17.3 million in cash and 1.4 million shares of our common stock, of which approximately 0.2 million shares are subject to a hold-back to satisfy indemnification obligations that may arise following the closing. These shares subject to a hold-back were issued to a third-party at the closing date to hold in escrow until the escrow period is complete, and as such were classified as equity. We included the financial results of One Codex in our consolidated financial statements from the acquisition date, which were not material.

The following table summarizes the purchase price and post-combination expense recorded as a part of the acquisition of One Codex (in thousands):

	Purchase Price	Post-combination Expense
Cash transferred	$ 16,504	$ 783
Hold-back consideration - common stock	8,113	359
Common stock transferred	58,774	2,600
Total	$ 83,391	$ 3,742

Assets acquired and liabilities assumed are recorded based on valuations derived from estimated fair value assessments and assumptions used by us. While we believe that our estimates and assumptions underlying the valuations are reasonable, different estimates and assumptions could result in different valuations assigned to the individual assets acquired and liabilities assumed, and the resulting amount of goodwill. The following table summarizes the fair values of assets acquired and liabilities assumed through our acquisition of One Codex at the date of acquisition (in thousands):

Cash	$ 1,549
Accounts receivable	684
Developed technology	23,841
Customer relationships	440
Total identifiable assets acquired	26,514
Other liabilities	(415)
Deferred tax liability	(6,150)
Net identifiable assets acquired	19,949
Goodwill	63,442
Total purchase price	$ 83,391

us-gaap_BusinessCombinationDisclosureTextBlock us-gaap_ dtr-types:textBlockItemType na duration

Based on the guidance provided in ASC 805, *Business Combinations*, we accounted for the acquisition of One Codex as a business combination and determined that 1) One Codex was a business which combines inputs and processes to create outputs, and 2) substantially all of the fair value of gross assets acquired was not concentrated in a single identifiable asset or group of similar identifiable assets.

Our purchase price allocation for the acquisition is preliminary and subject to revision as additional information about fair value of assets and liabilities becomes available, primarily related to our deferred tax liability assumed in connection with the acquisition. Additional information that existed as of the acquisition date but at the time was unknown to us may become known to us during the remainder of the measurement period, a period not to exceed 12 months from the acquisition date.

We measured the identifiable assets and liabilities assumed at their acquisition date fair values separately from goodwill. The intangible assets acquired were developed technology related to One Codex's microbiome and infectious disease platform and its customer relationships in place at time of acquisition. The fair value of the intangible assets was estimated using an income approach with an estimated useful life of nine years.

Goodwill represents the excess of the purchase price over the fair value of the net tangible and intangible assets acquired. The acquisition of One Codex resulted in the recognition of $63.4 million of goodwill, which we believe relates primarily to expansion of the acquired technology to apply to new areas of genetic testing. The goodwill created as a result of the acquisition of One Codex is not deductible for tax purposes.

Genosity

In April 2021, we acquired 100% of the fully diluted equity of Genosity Inc. ("Genosity"), a company providing genomic laboratory services, for approximately $196.0 million, consisting of approximately $120.0 million in cash and the remainder in shares of our common stock. In connection with this transaction, we granted RSUs having a value of up to $5.0 million to certain continuing employees and recognized $0.3 million and $0.5 million in stock-based compensation expense for the three and nine months ended September 30, 2021. We included the financial results of Genosity in our consolidated financial statements from the acquisition date, which were not material.

The following table summarizes the purchase price recorded as a part of the acquisition of Genosity (in thousands):

	Purchase Price
Cash transferred	$ 119,959
Hold back and other consideration	8,774
Common stock transferred	67,308
Total	$ 196,041

Assets acquired and liabilities assumed are recorded based on valuations derived from estimated fair value assessments and assumptions used by us. While we believe that our estimates and assumptions underlying the valuations are reasonable, different estimates and assumptions could result in different valuations assigned to the individual assets acquired and liabilities assumed, and the resulting amount of goodwill. The following table summarizes the fair values of assets acquired and liabilities assumed through our acquisition of Genosity at the date of acquisition (in thousands):

Cash	$ 906
Accounts receivable	355
Developed technology	76,500
Other assets	3,732
Total identifiable assets acquired	81,493
Other liabilities	(2,852)
Deferred tax liability	(17,600)
Net identifiable assets acquired	61,041
Goodwill	135,000
Total purchase price	$ 196,041

Based on the guidance provided in ASC 805, *Business Combinations*, we accounted for the acquisition of Genosity as a business combination and determined that 1) Genosity was a business which combines inputs and processes to create outputs, and 2) substantially all of the fair value of gross assets acquired was not concentrated in a single identifiable asset or group of similar identifiable assets. Pursuant to the terms of the acquisition, we incorporated a provision to provide additional shares in the event that our common stock share price decreased after the acquisition, but prior to filing a resale registration statement. At acquisition we estimated this provision to be $7.0 million. On filing the resale registration statement during the period ended June 30, 2021, the fair value was $3.2 million; the difference of $3.8 million was recorded as an expense in general and administrative expense.

Our purchase price allocation for the acquisition is preliminary and subject to revision as additional information about fair value of assets and liabilities becomes available, primarily related to certain aspects of our asset valuations and our deferred tax liability assumed in connection with the acquisition. Additional information that existed as of the acquisition date but at the time was unknown to us may become known to us during the remainder of the measurement period, a period not to exceed 12 months from the acquisition date.

We measured the identifiable assets and liabilities assumed at their acquisition date fair values separately from goodwill. The intangible assets acquired were developed technology related to Genosity's genomic laboratory services and sequencing software in place at time of acquisition. The fair value of the intangible assets was estimated using an income approach with an estimated useful life of twelve years.

Goodwill represents the excess of the purchase price over the fair value of the net tangible and intangible assets acquired. The acquisition of Genosity resulted in the recognition of $135.0 million of goodwill, which we believe relates primarily to expansion of the acquired technology to apply to new areas of genetic testing. The goodwill created as a result of the acquisition of Genosity is not deductible for tax purposes.

Ciitizen

In September 2021, we acquired 100% of the equity of Ciitizen Corporation ("Ciitizen"), a patient-centric health technology company, for approximately $308.3 million, consisting of approximately $87.4 million in cash and 6.3 million shares of our common stock, of which approximately $10.4 million in cash and 0.8 million shares are subject to a hold-back to satisfy indemnification obligations that may arise following the closing. As of

September 30, 2021, the value of the stock payable liability was $22.7 million with the $1.1 million quarterly change recorded in other income (expense), net. In connection with this transaction, we granted RSUs having a value of up to $246.9 million to certain continuing employees. During the three and nine months ended September 30, 2021, we recorded stock-based compensation expense of $1.6 million. We included the financial results of Ciitizen in our consolidated financial statements from the acquisition date, which were not material.

The following table summarizes the purchase price recorded as a part of the acquisition of Ciitizen (in thousands):

	Purchase Price
Cash transferred	$ 87,361
Hold back and other consideration	34,1
Common stock transferred	186,7
Total	$ 308,3

Assets acquired and liabilities assumed are recorded based on valuations derived from estimated fair value assessments and assumptions used by us. While we believe that our estimates and assumptions underlying the valuations are reasonable, different estimates and assumptions could result in different valuations assigned to the individual assets acquired and liabilities assumed, and the resulting amount of goodwill. The following table summarizes the fair values of assets acquired and liabilities assumed through our acquisition of Ciitizen at the date of acquisition (in thousands):

Cash	$ 274
Accounts receivable	748
Other receivables	688
Developed technology	92,900
Other assets	970
Total identifiable assets acquired	95,580
Other liabilities	(2,550)
Deferred tax liability	(6,900)
Net identifiable assets acquired	86,130
Goodwill	222,170
Total purchase price	$ 308,300

Based on the guidance provided in ASC 805, *Business Combinations*, we accounted for the acquisition of Ciitizen as a business combination and determined that 1) Ciitizen was a business which combines inputs and processes to create outputs, and 2) substantially all of the fair value of gross assets acquired was not concentrated in a single identifiable asset or group of similar identifiable assets.

Our purchase price allocation for the acquisition is preliminary and subject to revision as additional information about fair value of assets and liabilities becomes available, primarily related to certain aspects of our deferred tax liability assumed in connection with the acquisition. Additional information that existed as of the acquisition date but at the time was unknown to us may become known to us during the remainder of the measurement period, a period not to exceed 12 months from the acquisition date.

We measured the identifiable assets and liabilities assumed at their acquisition date fair values separately from goodwill. The intangible asset acquired were developed technology related to Ciitizen's patient data platform. The fair value of the intangible assets was estimated using an income approach with an estimated useful life of twelve years.

Goodwill represents the excess of the purchase price over the fair value of the net tangible and intangible assets acquired. The acquisition of Ciitizen resulted in the recognition of $222.2 million of goodwill, which we believe relates primarily to expansion of the acquired technology to apply to new areas of patient-centric consumer health tech company. The goodwill created as a result of the acquisition of Ciitizen is not deductible for tax purposes.

+ Details

Cover - Goodwill and intangible assets

Goodwill and intangible assets	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Goodwill and Intangible Assets Disclosure [Abstract]	us-gaap_GoodwillAndIntangibleAssetsDisclosureAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Goodwill and intangible assets	us-gaap_GoodwillAndIntangibleAssetsDisclosureTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	Goodwill and intangible assets

Goodwill

The changes in the carrying amounts of goodwill were as follows (in thousands):

Balance as of December 31, 2020	$ 1,863,623
Goodwill adjustment	(1,176)
Goodwill acquired	420,612
Balance as of September 30, 2021	$ 2,283,059

Intangible assets

The following table presents details of our intangible assets (amounts in thousands, useful lives in years):

	September 30, 2021				December 31, 2020			
	Cost	Accumulated Amortization	Net	Weighted-Average Useful Life	Cost	Accumulated Amortization	Net	Weighted-Average Useful Life
Customer relationships	$ 41,515	$ (11,896)	$ 29,619	10.8	$ 41,075	$ (8,292)	$ 32,783	10.8
Developed technology	624,663	(66,280)	558,383	10.3	397,563	(31,013)	366,550	10.6
Non-compete agreement	286	(272)	14	5.0	286	(229)	57	5.0
Tradename	21,085	(1,767)	19,318	12.0	21,085	(447)	20,638	12.0
Patent assets and licenses	495	(128)	367	15.0	496	(103)	393	15.0
Right to develop new technology	19,359	(1,291)	18,068	15.0	19,359	(323)	19,036	15.0
In-process research and development	542,388	—	542,388	n/a	542,388	—	542,388	n/a
	$1,249,791	$ (81,634)	$1,168,157	10.5	$1,022,252	$ (40,407)	$981,845	10.9

Acquisition-related intangibles included in the above table are generally finite-lived, other than in-process research and development, which has an indefinite life, and are carried at cost less accumulated amortization. Customer relationships related to our 2017 business combinations are being amortized on an accelerated basis in proportion to estimated cash flows. All other finite-lived acquisition-related intangibles are being amortized on a straight-line basis over their estimated lives, which approximates the pattern in which the economic benefits of the intangible assets are expected to be realized. Amortization expense was $15.6 million and $5.6 million for the three months ended September 30, 2021 and 2020, respectively, and $41.2 million and $14.8 million for the nine months ended September 30, 2021 and 2020, respectively. Amortization expense is recorded in cost of revenue, research and development, selling and marketing and general and administrative expense.

The following table summarizes our estimated future amortization expense of intangible assets with finite lives as of September 30, 2021 (in thousands):

2021 (remainder of year)	$ 17,607
2022	69,025
2023	68,012
2024	67,734
2025	65,980
Thereafter	337,411
Total estimated future amortization expense	$ 625,769

In July 2021, we acquired 100% of the equity interest of Medneon LLC, a digital health AI company, for $34.1 million in the form of $10.3 million in common stock, $4.9 million in liabilities, and the remainder in cash. We accounted for this transaction as an asset acquisition, as substantially all of the fair value is concentrated in the developed technology acquired. The fair value the of the developed technology is $33.9 million, which will be amortized over eight years to cost of revenue. The remaining purchase price of $0.2 million is the fair value of cash and cash equivalents.

+ Details

Cover - Balance sheet components

Balance sheet components	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Balance Sheet Related Disclosures [Abstract]	us-gaap_BalanceSheetRelatedDisclosuresAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Balance sheet components						Balance sheet components
	us-gaap_SupplementalBalanceSheetDisclosuresTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	

Inventory

Inventory consisted of the following (in thousands):

	September 30, 2021	December 31, 2020
Raw materials	$ 26,318	$ 21,324
Work in progress	3,215	8,847
Finished goods	1,100	1,859
Total inventory	$ 30,633	$ 32,030

Property and equipment, net

Property and equipment consisted of the following (in thousands):

	September 30, 2021	December 31, 2020
Leasehold improvements	$ 31,059	$ 26,516
Laboratory equipment	61,994	45,342
Computer equipment	15,829	10,939
Software	867	566
Furniture and fixtures	2,046	1,967
Automobiles	58	58
Construction-in-progress	33,672	12,061
Total property and equipment, gross	145,525	97,449
Accumulated depreciation and amortization	(44,525)	(31,347)
Total property and equipment, net	$ 101,000	$ 66,102

Depreciation expense was $5.1 million and $2.4 million for the three months ended September 30, 2021 and 2020, respectively, and $13.2 million and $6.8 million for the nine months ended September 30, 2021 and 2020, respectively.

Accrued liabilities

Accrued liabilities consisted of the following (in thousands):

	September 30, 2021	December 31, 2020
Accrued compensation and related expenses	$ 40,037	$ 25,221
Accrued interest	583	2,333
Compensation and other liabilities associated with business combinations	15,377	25,600
Deferred revenue	8,261	6,378
Other	40,050	26,526
Total accrued liabilities	$ 104,308	$ 86,058

Other long-term liabilities

Other long-term liabilities consisted of the following (in thousands):

	September 30, 2021	December 31, 2020
Deferred revenue, non-current	678	1,380
Compensation and other liabilities associated with business combinations, non-current	39,625	825,976
Other	15,879	13,900
Total other long-term liabilities	$ 56,182	$ 841,256

+ Details

Cover - Fair value measurements

Fair value measurements	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Fair Value Disclosures [Abstract]	us-gaap_FairValueDisclosuresAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Fair value measurements						Fair value measurements

Financial assets and liabilities are recorded at fair value. Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability (an exit price) in an orderly transaction between market participants at the reporting date. The authoritative guidance establishes a three-level valuation hierarchy that prioritizes the inputs to valuation techniques used to measure fair value based upon whether such inputs are observable or unobservable. Observable inputs reflect market data obtained from independent sources, while unobservable inputs reflect market assumptions made by the reporting entity.

The three-level hierarchy for the inputs to valuation techniques is summarized as follows:

Level 1—Observable inputs such as quoted prices (unadjusted) for identical instruments in active markets.

Level 2—Observable inputs such as quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, or model-derived valuations whose significant inputs are observable.

Level 3—Unobservable inputs that reflect the reporting entity's own assumptions.

The following tables set forth the fair value of our financial instruments that were measured at fair value on a recurring basis (in thousands):

	September 30, 2021					
	Amortized Cost	Unrealized Gains	Unrealized Losses	Estimated Fair Value	Level 1	Level 2	Level 3
Financial assets:							
Money market funds	$ 864,694	$ —	$ —	$ 864,694	$ 864,694	$ —	$ —
U.S. Treasury notes	274,398	19	—	274,417	274,417	—	—
U.S. government agency securities	46,046	2	—	46,048	—	46,048	—
Total financial assets	$1,185,138	$ 21	$ —	$1,185,159	$1,139,111	$46,048	$ —
Financial liabilities:							
Stock payable liability				$ 34,087	$ —	$ —	$34,087
Contingent consideration				1,685	—	—	1,685
Total financial liabilities				$ 35,772	$ —	$ —	$35,772

	September 30, 2021
Reported as:	
Cash equivalents	$ 854,419
Restricted cash	10,275
Marketable securities	320,465
Total cash equivalents, restricted cash, and marketable securities	$ 1,185,159
Accrued liabilities	$ —
Other long-term liabilities	35,772
Total liabilities	$ 35,772

						December 31, 2020			
						Amortized Cost	Unrealized Gains	Unrealized Losses	Estimated Fair Value	Level 1	Level 2	Level 3
	us-gaap_FairValueDisclosuresTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration							
Financial assets:												
Money market funds						$ 83,109	$ —	$ —	$ 83,109	$ 83,109	$ —	$ —
U.S. Treasury notes						164,894	7	(15)	164,886	164,886	—	—
U.S. government agency securities						64,291	9	—	64,300	—	64,300	—
Total financial assets						$312,294	$ 16	$ (15)	$312,295	$247,995	$64,300	$ —
Financial liabilities:												
Stock payable liability									$ 39,237	$ —	$ —	$ 39,237
Contingent consideration									796,639	—	—	796,639
Total financial liabilities									$835,876	$ —	$ —	$835,876

	December 31, 2020
Reported as:	
Cash equivalents	$ 76,423
Restricted cash	6,686
Marketable securities	229,186
Total cash equivalents, restricted cash, and marketable securities	$ 312,295
Accrued liabilities	$ 10,592
Other long-term liabilities	825,284
Total liabilities	$ 835,876

There were no transfers between Level 1, Level 2 and Level 3 during the periods presented. There were no investments with unrealized losses at September 30, 2021. Our debt securities of U.S. government agencies are classified as Level 2 as they are valued based upon quoted market prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active and model-based valuation techniques for which all significant inputs are observable in the market or can be corroborated by observable market data for substantially the full term of the assets. Where applicable, these models project future cash flows and discount the future amounts to a present value using market-based observable inputs obtained from various third-party data providers, including but not limited to benchmark yields, interest rate curves, reported trades, broker/dealer quotes and reference data.

Stock payable liabilities relate to certain indemnification hold-backs resulting from business combinations that are settled in shares of our common stock. We elected to account for these liabilities using the fair value option due to the inherent nature of the liabilities and the changes in value of the underlying shares that will ultimately be issued to settle the liabilities. The estimated fair value of these liabilities is classified as Level 3 and determined based upon the number of shares that are issuable to the sellers and the quoted closing price of our common stock as of the reporting date. The number of shares that will ultimately be issued is subject to adjustment for indemnified claims that existed as of the closing date for each acquisition. Changes in the number of shares issued and share price can significantly affect the estimated fair value of the liabilities. The change in fair value related to stock payable liabilities recorded to other income (expense), net during the three months ended September 30, 2021 and 2020 was income of $3.4 million and expense of $16.2 million, respectively, and income of $9.2 million and expense of $37.9 million during the nine months ended September 30, 2021 and 2020, respectively.

+ Details

Cover - Commitments and contingencies

Commitments and contingencies	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Commitments and Contingencies Disclosure [Abstract]	us-gaap_CommitmentsAndContingenciesDisclosureAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Commitments and contingencies						Commitments and contingencies

Leases

In 2015, we entered into an operating lease agreement for our headquarters and main production facility in San Francisco, California, which commenced in 2016. This lease expires in 2026 and we may renew the lease for an additional ten years. This optional period was not considered reasonably certain to be exercised and therefore we determined the lease term to be a ten-year period expiring in 2026. In connection with the execution of the lease, we provided a security deposit of approximately $4.6 million, which is included in restricted cash in our consolidated balance sheets. We also have other operating leases for office and laboratory space domestically and internationally. We expect to enter into new leases and modify existing leases as we support continued growth of our operations.

We have entered into various finance lease agreements to obtain laboratory equipment. The terms of our finance leases are generally three years and are typically secured by the underlying equipment. The portion of the future payments designated as principal repayment and related interest was classified as a finance lease obligation on our consolidated balance sheets. Finance lease assets are recorded within other assets on our consolidated balance sheets.

Debt financing

In October 2020, we entered into a credit agreement with a financial institution under which we borrowed $135.0 million (the "2020 Term Loan") concurrent with the closing of the ArcherDX acquisition. The 2020 Term Loan is secured by a first priority lien on all of our and our subsidiaries' assets, and is guaranteed by us and our subsidiaries. The 2020 Term Loan bears interest at an annual rate equal to three-month LIBOR, subject to a 2.00% LIBOR floor, plus a margin of 8.75%. If three-month LIBOR can no longer be determined or if the applicable governmental authority ceases to supervise or sanction such rates, then we shall endeavor to agree with the administrative agent, an alternate rate of interest that gives due consideration to the then prevailing market convention for determining interest for comparable loans in the United States; provided that until such alternative rate of interest is agreed, the 2020 Term Loan shall bear interest at the *Wall Street Journal* Prime Rate. The 2020 Term Loan will mature on (i) June 1, 2024 if at such time our 2024 Notes (defined below) are outstanding and are due to mature on September 1, 2024 (provided that if, prior to such date, the maturity date of at least 80% of the 2024 Notes is extended to a date that is prior to September 1, 2025, the maturity date for the 2020 Term Loan will be automatically extended to a date that is 90 days prior to such 2024 Notes maturity date as extended), or (ii) otherwise, on June 1, 2025. The full amount of the 2020 Term Loan is due upon maturity. Debt discounts, including debt issuance costs, related to the 2020 Term Loan of $32.8 million were recorded as a direct deduction from the debt liability and are being amortized to interest expense over the term of the 2020 Term Loan. Interest expense related to our debt financings, excluding the impact of our convertible senior notes, was $5.9 million and nil for the three months ended September 30, 2021 and 2020, respectively, and $17.7 million and nil for the nine months ended September 30, 2021 and 2020, respectively.

Convertible senior notes

Convertible senior notes due 2024

In September 2019, we issued, at par value, $350.0 million aggregate principal amount of 2.00% convertible senior notes due 2024 (the "2024 Notes") in a private offering. The 2024 Notes are our senior unsecured obligations and will mature on September 1, 2024, unless earlier converted, redeemed or repurchased. The 2024 Notes bear cash interest at a rate of 2.0% per year, payable semi-annually in arrears on March 1 and September 1 of each year, beginning on March 1, 2020.

Upon conversion, the 2024 Notes will be convertible into cash, shares of our common stock or a combination of cash and shares of our common stock, at our election. The initial conversion rate for the 2024 Notes is 33.6293 shares of our common stock per $1,000 principal amount of the 2024 Notes (equivalent to an initial conversion price of approximately $29.74 per share of common stock).

If we undergo a fundamental change (as defined in the indenture governing the 2024 Notes), the holders of the 2024 Notes may require us to repurchase all or any portion of their 2024 Notes for cash at a repurchase price equal to 100% of the principal amount of the 2024 Notes to be repurchased plus accrued and unpaid interest to, but excluding, the redemption date.

The 2024 Notes will be convertible at the option of the holders at any time prior to the close of business on the business day immediately preceding March 1, 2024, only under the following circumstances: (1) during any calendar quarter commencing after the calendar quarter ending on December 31, 2019 (and only during such calendar quarter), if the last reported sale price of our common stock for at least 20 trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on, and including, the last trading day of the immediately preceding calendar quarter is greater than or equal to 130% of the conversion price for the 2024 Notes on each applicable trading day; (2) during the five business day period after any five consecutive trading day period (the “measurement period”) in which the trading price per $1,000 principal amount of 2024 Notes for each trading day of the measurement period was less than 98% of the product of the last reported sale price of our common stock and the conversion rate on each such trading day; (3) if we call any or all of the 2024 Notes for redemption, at any time prior to the close of business on the scheduled trading day immediately preceding the redemption date; or (4) upon the occurrence of specified corporate events. On or after March 1, 2024 until the close of business on the business day immediately preceding the maturity date, holders may convert their 2024 Notes at any time, regardless of the foregoing circumstances. These notes were convertible at the option of the holders during the quarters beginning on January 1, 2021 and April 1, 2021 due to the sale price of our common stock during the quarters ended December 31, 2020 and March 31, 2021, respectively. No holders converted their notes during the nine months ended September 30, 2021.

We may not redeem the 2024 Notes prior to September 6, 2022. We may redeem for cash all or any portion of the 2024 Notes, at our option, on or after September 6, 2022 and on or before the 30th scheduled trading day immediately before the maturity date if the last reported sale price of our common stock has been at least 130% of the conversion price then in effect for at least 20 trading days (whether or not consecutive) during any 30 consecutive trading day period (including the last trading day of such period) ending on, and including, the trading day immediately preceding the date on which we provide notice of redemption at a redemption price equal to 100% of the principal amount of the notes to be redeemed, plus accrued and

unpaid interest to, but excluding, the redemption date.

Convertible senior notes due 2028

In April 2021, we issued, at 99% of par value, $1.2 billion aggregate principal amount of 1.5% convertible senior notes due 2028 (the "2028 Notes") in a private offering. The 2028 Notes are our senior unsecured obligations and will mature on April 1, 2028, unless earlier converted, redeemed or repurchased. The 2028 Notes bear cash interest at a rate of 1.5% per year, payable semi-annually in arrears on April 1 and October 1 of each year, beginning on October 1, 2021. Upon conversion, the 2028 Notes will be convertible into cash, shares of our common stock or a combination of cash and shares of our common stock, at our election.

The 2028 Notes will be convertible at the option of the holder at any time until the second scheduled trading day prior to the maturity date, including in connection with a redemption by us. The 2028 Notes will be convertible into shares of our common stock based on an initial conversion rate of 23.1589 shares of common stock per $1,000 principal amount of the 2028 Notes (which is equal to an initial conversion price of $43.18 per share), in each case subject to customary anti-dilution and other adjustments as a result of certain extraordinary transactions.

We may not redeem the 2028 Notes prior to April 6, 2025. On or after April 6, 2025, the 2028 Notes will be redeemable by us in the event that the closing sale price of our common stock has been at least 150% of the conversion price then in effect for at least 20 trading days (whether or not consecutive) during any 30 consecutive trading day period (including the last trading day of such period) ending on, and including, the trading day immediately preceding the date on which we provide the redemption notice at a redemption price of 100% of the principal amount of such 2028 Notes, plus accrued and unpaid interest to, but excluding, the redemption date.

With certain exceptions, upon a change of control of the Company or the failure of our common stock to be listed on certain stock exchanges, the holders of the 2028 Notes may require that we repurchase all or part of the principal amount of the Notes at a repurchase price of 100% of the principal amount of the 2028 Notes to be repurchased, plus unpaid interest to, but excluding, the maturity date.

Convertible senior notes

We adopted the provisions of ASU 2020-06 on January 1, 2021; see further information in Note 2, "Summary of significant accounting policies." Our 2024 Notes and 2028 Notes (collectively, our "convertible senior notes") consisted of the following (in thousands):

	September 30, 2021	December 31, 2020
Outstanding principal	$1,499,996	$350,000
Unamortized debt discount and issuance costs	(37,497)	(66,276)
Net carrying amount, liability component	$1,462,499	$283,724

As of September 30, 2021, the fair value of the 2024 Notes and 2028 Notes was $429.5 million and $1.2 billion, respectively. The estimated fair value of the 2024 Notes and 2028 Notes, which use Level 2 fair value inputs, was determined based on the estimated or actual bid prices in an over-the-counter market and/or market conditions including the price and volatility of our common stock and comparable company information. We recognized $7.7 million and $5.5 million of interest expense related to our convertible senior notes during the three months ended September 30, 2021 and 2020, respectively, and $17.2 million and $16.4 million during the nine months ended September 30, 2021 and 2020,

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respectively. Of the interest expense recognized during the three and nine months ended September 30, 2021, $1.6 million and $3.6 million, respectively, was related to amortization of issuance costs and the remainder was related to contractual interest incurred.

Other commitments

In the normal course of business, we enter into various purchase commitments primarily related to service agreements and laboratory supplies. At September 30, 2021, our total future payments under noncancelable unconditional purchase commitments having a remaining term of over one year were $66.7 million.

Guarantees and indemnifications

As permitted under Delaware law and in accordance with our bylaws, we indemnify our directors and officers for certain events or occurrences while the officer or director is or was serving in such capacity. The maximum amount of potential future indemnification is unlimited; however, we maintain director and officer liability insurance. This insurance allows the transfer of the risk associated with our exposure and may enable us to recover a portion of any future amounts paid. We believe the fair value of these indemnification agreements is minimal. Accordingly, we did not record any liabilities associated with these indemnification agreements at September 30, 2021 or December 31, 2020.

Contingencies

We are and may from time to time be involved in various legal proceedings and claims arising in the ordinary course of business. Legal proceedings, including litigation, government investigations and enforcement actions could result in material costs, occupy significant management resources and entail civil and criminal penalties, even if we ultimately prevail. If an investigation results in a proceeding against us, an adverse outcome could include us being required to pay treble damages, and incur attorneys' fees, civil or criminal penalties and other adverse actions that could materially and adversely affect our business, financial condition and results of operations. While we believe any such claims are unsubstantiated, and we believe we are in compliance with applicable laws and regulations applicable to our business, the resolution of any such claims could be material.

We were not a party to any material legal proceedings at September 30, 2021, or at the date of this report except for matters listed below. We cannot currently predict the outcome of these actions.

Natera, Inc.

On January 27, 2020, Natera filed a lawsuit against ArcherDX (a subsidiary of Invitae effective October 2, 2020) in the United States District Court for the District of Delaware, alleging that ArcherDX's products using AMP chemistry, and the manufacture, use, sale, and offer for sale of such products, infringe U.S. Patent No. 10,538,814. On March 25, 2020, ArcherDX filed an answer denying Natera's allegations and asserting certain affirmative defenses and counterclaims, including that U.S. Patent No. 10,538,814 is invalid and not infringed. On April 15, 2020, Natera filed an answer denying ArcherDX's counterclaims and filed an amended complaint alleging that ArcherDX's products using AMP chemistry, including STRATAFIDE, PCM, LiquidPlex, ArcherMET, FusionPlex, and VariantPlex, and the manufacture, use, sale, and offer for sale of such products, infringe U.S. Patent No. 10,538,814, U.S. Patent No. 10,557,172, U.S. Patent No. 10,590,482, and U.S. Patent No. 10,597,708, each of which are held by Natera. Natera seeks, among other things, damages and other monetary relief, costs and attorneys' fees, and an order enjoining ArcherDX from further infringement of such patents. On May 13, 2020, ArcherDX

filed an answer to Natera's amended complaint denying Natera's allegations and asserting certain affirmative defenses and counterclaims, including that the asserted patents are invalid and not infringed. On June 3, 2020, Natera filed an answer denying ArcherDX's counterclaims. On June 4, 2020, ArcherDX filed a motion seeking dismissal of Natera's infringement claims against STRATAFIDE, PCM, and ArcherMET, and for a judgment that U.S. Patent No. 10,538,814, U.S. Patent No. 10,557,172, and U.S. Patent No. 10,590,482 are invalid. On August 6, 2020, Natera filed another complaint against ArcherDX in the United States District Court for the District of Delaware alleging that ArcherDX's products using AMP chemistry, including STRATAFIDE, PCM, LiquidPlex, ArcherMET, and VariantPlex, and the manufacture, use, sale, and offer for sale of such products, infringe U.S. Patent No. 10,731,220. Natera seeks, among other things, damages and other monetary relief, costs and attorneys' fees, and an order enjoining ArcherDX from further infringement of the patent. On October 13, 2020, the court issued an order denying ArcherDX's motion for dismissal of Natera's infringement claims against STRATAFIDE, PCM, and ArcherMET, and declined to enter judgment that U.S. Patent No. 10,538,814, U.S. Patent No. 10,557,172, and U.S. Patent No. 10,590,482 are invalid. On January 12, 2021, the court issued an order granting Natera leave to amend its complaint to add Invitae as a co-defendant and plead allegations that ArcherDX and Invitae induce end-users to infringe the patents-in-suit. Natera filed its Second Amended Complaint on the same day, with service completed on January 15, 2021. ArcherDX and Invitae filed answers to the Second Amended Complaint on January 26, 2021 and February 5, 2021, respectively, denying Natera's allegations and restating certain affirmative defenses and counterclaims of non-infringement and invalidity. The litigations have now been consolidated for all purposes. A claim construction order was issued on June 28, 2021. On October 27, 2021, Natera filed its Third Amended Complaint to add a Certificate of Correction to U.S. Patent No. 10,590,482. On November 3, 2021, ArcherDX filed its Answer and Counterclaims to Natera's Third Amended Complaint, adding an inequitable conduct defense and declaratory judgment counterclaims. Discovery is ongoing, and trial has been scheduled for May 2022.

In addition, on October 6, 2020, Natera filed a complaint against Genosity in the United States District Court for the District of Delaware, alleging that Genosity's use of its AsTra products, and the manufacture, use, sale, and offer for sale of such products, infringes U.S. Patent No. 10,731,220. Natera's complaint further alleges that Genosity's accused products use ArcherDX's ctDNA and region-specific primers. Genosity filed an answer to the complaint on February 15, 2021, denying Natera's allegations and setting forth affirmative defenses and counterclaims of non-infringement, invalidity and unenforceability due to inequitable conduct. On March 8, 2021, Natera filed a motion to dismiss and strike certain affirmative defenses and counterclaims brought by Genosity relating to inequitable conduct; the court has not yet issued a decision. No case schedule has been set.

QIAGEN Sciences

On July 10, 2018, ArcherDX and the General Hospital Corporation d/b/a Massachusetts General Hospital, which we refer to as MGH, filed a lawsuit in the United States District Court for the District of Delaware against QIAGEN Sciences, LLC, QIAGEN LLC, QIAGEN Beverly, Inc., QIAGEN Gaithersburg, Inc., QIAGEN GmbH and QIAGEN N.V., which is collectively referred to herein as QIAGEN, and a named QIAGEN executive who was a former member of ArcherDX's board of directors, alleging several causes of action,

including infringement of the '810 Patent, trade secret misappropriation, breach of fiduciary duty, false advertising, tortious interference and deceptive trade practices. The '810 Patent relates to methods for preparing a nucleic acid for sequencing and aspects of ArcherDX's AMP technology. On October 30, 2019, with the permission of the Court, ArcherDX amended ArcherDX's complaint to add a claim for infringement of the '597 Patent. The '597 Patent relates to methods of preparing and analyzing nucleic acids, such as by enriching target sequences prior to sequencing, and aspects of ArcherDX's AMP technology. The QIAGEN products that ArcherDX alleges infringe the '810 Patent and the '597 Patent include, but are not limited to, QIAseq Targeted DNA Panels, QIAseq Targeted RNAscan Panels, QIAseq Index Kits and QIAseq Immune Repertoire RNA Library Kits. ArcherDX is seeking, among other things, damages for ArcherDX's lost profits due to QIAGEN's infringement and a permanent injunction enjoining QIAGEN from marketing and selling the infringing products and from using ArcherDX's trade secrets. On December 5, 2019, QIAGEN and the named QIAGEN executive submitted their answer denying the allegations in ArcherDX's complaint and asserting affirmative defenses that, among other things, the '810 Patent and '597 Patent are not infringed by QIAGEN's products, that both patents are invalid, and that the complaint fails to state any claim for which relief may be granted. On March 1, 2021, each of ArcherDX and QIAGEN moved for summary judgment on issues relating to infringement and validity of ArcherDX's patents, breach of fiduciary duty and trade secret misappropriation. On June 18, 2021, ArcherDX informed the court that it would not assert the following claims to streamline the issues for trial: trade secret misappropriation, false advertising, deceptive trade practices, and tortious interference. The court denied QIAGEN's motion for summary judgment on trade secret misappropriation as moot on June 21, 2021, denied QIAGEN's motion for summary judgment on breach of fiduciary duty on July 26, 2021, and granted QIAGEN's motion for summary judgment of no literal infringement of the '810 Patent on August 21, 2021. Trial proceeded on August 23 through August 27, 2021, resulting in a unanimous jury verdict, which found that: (i) all asserted claims of the '810 and '597 Patents are valid, (ii) QIAGEN willfully infringed the asserted claims of the '810 patent (under the doctrine of equivalents) and the '597 patent (literal infringement), and (iii) ArcherDX and MGH are entitled to recover approximately $4.7 million in damages. Both parties filed post-trial motions on October 21, 2021, in which (x) Qiagen seeks to overturn the jury verdict by requesting judgment as a matter of law or, in the alternative, a new trial or altered judgment on the issues of non-infringement, invalidity and damages, and (y) ArcherDX seeks a permanent injunction on infringing products and services approved for clinical diagnosis by a regulatory authority, ongoing royalty for products not enjoined, supplemental damages, interest and enhanced damages.

+ Details

Cover - Stockholders' equity

Stockholders' equity	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Equity [Abstract]	us-gaap_EquityAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Stockholders' equity	us-gaap_StockholdersEquityNoteDisclosureTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	Stockholders' equity

Shares outstanding

Shares of convertible preferred and common stock were as follows (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2021	2020	2021	2020
Convertible preferred stock:				
Shares outstanding, beginning of period	125	125	125	125
Conversion into common stock	(125)	—	(125)	—
Shares outstanding, end of period	—	125	—	125
Common stock:				
Shares outstanding, beginning of period	203,018	131,289	185,886	98,796
Common stock issued in connection with public offering	—	—	8,932	23,058
Common stock issued on exercise of stock options, net	1,361	245	1,940	553
Common stock issued pursuant to vesting of RSUs	718	1,322	4,101	4,803
Common stock issued pursuant to exercises of warrants	—	54	208	202
Common stock issued pursuant to employee stock purchase plan	—	—	271	342
Common stock issued pursuant to business combinations	21,005	358	24,764	5,514
Common stock issued upon conversion of preferred stock	125	—	125	—
Shares outstanding, end of period	226,227	133,268	226,227	133,268

Convertible preferred stock

In August 2017, in a private placement to certain accredited investors, we issued shares of our Series A convertible preferred stock which are convertible into common stock on a one-for-one basis, subject to adjustment for events such as stock splits, combinations and the like. The Series A convertible preferred stock is a non-voting common stock equivalent with a par value of $0.0001 and has the right to receive dividends first or simultaneously with payment of dividends on common stock. In the event of any liquidation or dissolution of the Company, the Series A preferred stock is entitled to receive $0.001 per share prior to the payment of any amount to any holders of capital stock ranking junior to the Series A preferred stock and thereafter shall participate pari passu with the holders of our common stock (on an as-if-converted-to-common-stock basis). During the quarter ended September 30, 2021, 124,913 shares of Series A convertible preferred stock were converted to 124,913 shares of common stock. As of September 30, 2021, there were no shares of Series A convertible preferred stock outstanding.

Sales Agreements

In May 2021, we entered into a sales agreement (the "2021 Sales Agreement") with Cowen and Company, LLC ("Cowen") under which we may offer and sell from time to time at our sole discretion shares of our common stock through Cowen as our sales agent, in an aggregate amount not to exceed $400.0 million. Per the terms of the agreement, Cowen will receive a commission of up to 3% of the gross proceeds of the sales price of all shares sold through it as sales agent under the 2021 Sales Agreement.

In August 2018, we entered into a common stock sales agreement (the "2018 Sales Agreement") with Cowen under which we may have offered and sold from time to time at our sole discretion shares of our common stock through Cowen as our sales agent, in an aggregate amount not to exceed $75.0

million. Per the terms of the agreement, Cowen received a commission equal to 3% of the gross proceeds of the sales price of all shares sold through it as sales agent under the 2018 Sales Agreement. In March 2019, we amended the 2018 Sales Agreement to increase the aggregate amount of our common stock to be sold under this agreement not to exceed $175.0 million. During 2018, 2019 and 2020, we sold 8.7 million shares of our common stock for gross proceeds of the full $175.0 million under this agreement, and generated net proceeds of $169.1 million.

Public offering

In January 2021, we issued, in an underwritten public offering, an aggregate of 8.9 million shares of our common stock at a price of $51.50 per share, for gross proceeds of $460.0 million and net proceeds of $434.3 million after deducting underwriting discounts and commissions and offering expenses.

In April 2020, we sold, in an underwritten public offering, an aggregate of 20.4 million shares of our common stock at a price of $9.00 per share, for gross proceeds of $184.0 million and net proceeds of $173.0 million.

Private placement

In connection with our acquisition of ArcherDX, in June 2020 we entered into a definitive agreement to sell $275.0 million in common stock in a private placement at a price of $16.85 per share. We received net proceeds of $263.7 million after deducting underwriting discounts and commissions and offering expenses upon the closing of the private placement in October 2020, concurrently with our acquisition of ArcherDX.

+ Details

Cover - Stock incentive plans

Stock incentive plans	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Share-based Payment Arrangement [Abstract]	us-gaap_DisclosureOfCompensationRelatedCostsSharebasedPaymentsAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Stock incentive plans	us-gaap_DisclosureOfCompensationRelatedCostsShareBasedPaymentsTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	Stock incentive plans

Stock incentive plans

In 2010, we adopted the 2010 Incentive Plan (the "2010 Plan"). The 2010 Plan provides for the granting of stock-based awards to employees, directors and consultants under terms and provisions established by our Board of Directors. Under the terms of the 2010 Plan, options may be granted at an exercise price not less than the fair market value of our common stock. For employees holding more than 10% of the voting rights of all classes of stock, the exercise prices for incentive and nonstatutory stock options must be at least 110% of fair market value of our common stock on the grant date, as determined by our Board of Directors. The terms of options granted under the 2010 Plan may not exceed ten years.

In January 2015, we adopted the 2015 Stock Incentive Plan (the "2015 Plan"), which became effective upon the closing of our initial public offering. Shares outstanding under the 2010 Plan were transferred to the 2015 Plan upon effectiveness of the 2015 Plan. The 2015 Plan provides for automatic annual increases in shares available for grant, beginning on January 1, 2016 through January 1, 2025. In addition, shares subject to awards under the 2010 Plan that are forfeited or terminated will be added to the 2015 Plan. The 2015 Plan provides for the grant of incentive stock options, nonstatutory stock options, restricted stock awards, stock units, stock appreciation rights and other forms of equity compensation, all of which may be granted to employees, including officers, non-employee directors and consultants. Additionally, the 2015 Plan provides for the grant of cash-based awards.

Options granted generally vest over a period of four years. Typically, the vesting schedule for options granted to newly hired employees provides that 1/4 of the award vests upon the first anniversary of the employee's date of hire, with the remainder of the award vesting monthly thereafter at a rate of 1/48 of the total shares subject to the option. All other options typically vest in equal monthly installments over the four-year vesting schedule. Upon the acquisition of ArcherDX in October 2020, any option that was outstanding was converted into a fully vested option to purchase a share of our common stock, which resulted in the issuance of options to purchase 3.7 million shares of our common stock.

RSUs generally vest over a period of three years. Typically, the vesting schedule for RSUs provides that 1/3 of the award vests upon each anniversary of the grant date, with certain awards that include a portion that vests immediately upon grant. We also have certain awards granted in connection with our management incentive plan which vest over a period of two years. In June 2019, we granted Time-based RSUs in connection with the acquisition of Singular Bio which vested in three equal installments over a period of 18 months and PRSUs that vest based on the achievement of performance conditions; see further details in Note 4, "Business combinations."

Activity under the 2010 Plan and the 2015 Plan is set forth below (in thousands, except per share amounts and years):

	Shares Available For Grant	Stock Options Outstanding	Weighted-Average Exercise Price Per Share	Weighted-Average Remaining Contractual Life (Years)	Aggregate Intrinsic Value
Balances at December 31, 2020	7,447	4,877	$ 7.75	6.8	$166,130
Additional shares reserved	16,738	—			
Options granted	(244)	244	34.90		
Options cancelled	40	(40)	26.64		
Options exercised	—	(1,940)	4.21		
RSUs and PRSUs granted	(13,853)	—			
RSUs and PRSUs cancelled	842	—			
Balances at September 30, 2021	10,970	3,141	$ 11.80	5.8	$ 53,737
Options exercisable at September 30, 2021		2,687	$ 9.45	5.3	$ 51,080
Options vested and expected to vest at September 30, 2021		3,113	$ 11.74	5.8	$ 53,440

The aggregate intrinsic value is calculated as the difference between the exercise price of the underlying stock options and the fair value of our common stock for stock options that were in-the-money.

The following table summarizes RSU activity (in thousands, except per share data):

	Number of Shares	Weighted- Average Grant Date Fair Value Per Share
Balance at December 31, 2020	6,602	$ 12.89
RSUs and PRSUs granted	13,853	$ 30.53
RSUs and PRSUs vested	(4,101)	$ 21.17
RSUs and PRSUs cancelled	(842)	$ 25.53
Balance at September 30, 2021	15,512	$ 25.76

Stock-based compensation

The following table summarizes stock-based compensation expense included in the consolidated statements of operations (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2021	2020	2021	2020
Cost of revenue	$ 2,010	$ 2,104	$ 9,668	$ 5,321
Research and development	12,104	7,185	58,441	70,954
Selling and marketing	2,457	4,078	12,797	9,198
General and administrative	8,875	7,838	50,876	16,856

Total stock-based compensation expense	$ 25,446	$ 21,205	$ 131,782	$ 102,329

+ References + Details

Cover - Net loss per share

Net loss per share	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Earnings Per Share [Abstract]	us-gaap_EarningsPerShareAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Net loss per share	us-gaap_EarningsPerShareTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	Net loss per share The following table presents the calculation of basic and diluted net loss per share (in thousands, except per share amounts):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2021	2020	2021	2020
Net loss	$(198,176)	$(102,902)	$(173,882)	$(367,832)
Shares used in computing net loss per share, basic and diluted	218,384	132,484	205,587	119,386
Net loss per share, basic and diluted	$ (0.91)	$ (0.78)	$ (0.85)	$ (3.08)

The following common stock equivalents have been excluded from diluted net loss per share because their inclusion would be anti-dilutive (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2021	2020	2021	2020
Shares of common stock subject to outstanding options	3,884	3,365	4,371	3,419
Shares of common stock subject to outstanding warrants	—	330	36	396
Shares of common stock subject to outstanding RSUs and PRSUs	8,769	7,331	7,730	7,534
Shares of common stock pursuant to ESPP	368	312	304	316
Shares of common stock underlying Series A convertible preferred stock	125	125	125	125
Shares of common stock subject to convertible senior notes conversion	38,403	8,074	38,403	8,074
Total shares of common stock equivalents	51,549	19,537	50,969	19,864

+ Details

Cover - Geographic information

Geographic information	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Segments, Geographical Areas [Abstract]	us-gaap_SegmentsGeographicalAreasAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Geographic information	us-gaap_SegmentReportingDisclosureTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	Geographic information Revenue by country is determined based on the billing address of the customer. The following presents revenue by country (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2021	2020	2021	2020
United States	$100,957	$64,322	$293,868	$167,462
Rest of world	13,438	4,406	40,460	11,705
Total revenue	$114,395	$68,728	$334,328	$179,167

+ References + Details

Cover - Summary of significant accounting policies (Policies)

Summary of significant accounting policies (Policies)	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Accounting Policies [Abstract]	us-gaap_AccountingPoliciesAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Basis of presentation	us-gaap_BasisOfAccountingPolicyPolicyTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	Basis of presentationThe accompanying unaudited condensed consolidated financial statements have been prepared in accordance with U.S. generally accepted accounting principles ("U.S. GAAP") for interim financial information and in accordance with the instructions to Form 10-Q and Rule 10-01 of Regulation S-X. Accordingly, they do not include all of the information and footnotes required by generally accepted accounting principles for complete financial statements. The unaudited interim condensed consolidated financial statements have been prepared on the same basis as the annual financial statements. In the opinion of management, the accompanying unaudited condensed consolidated financial statements reflect all adjustments (consisting only of normal recurring adjustments) considered necessary for a fair presentation. The information included in this Quarterly Report on Form 10-Q should be read in conjunction with the audited financial statements and notes thereto included in our Annual Report on Form 10-K for the year ended December 31, 2020. The results for the three and nine

						months ended September 30, 2021 are not necessarily indicative of the results expected for the full fiscal year or any other periods.
Principles of consolidation	us-gaap_ConsolidationPolicyTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	***Principles of consolidation*** Our unaudited condensed consolidated financial statements include our accounts and the accounts of our wholly-owned subsidiaries. All intercompany balances and transactions have been eliminated in consolidation.
Use of estimates	us-gaap_UseOfEstimates	us-gaap_	dtr-types:textBlockItemType	na	duration	***Use of estimates*** The preparation of financial statements in conformity with U.S. GAAP requires management to make judgments, estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent liabilities as of the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. We base these estimates on current facts, historical and anticipated results, trends and various other assumptions that we believe are reasonable under the circumstances, including assumptions as to future events. Actual results could differ materially from those judgments, estimates and assumptions. We evaluate our estimates on an ongoing basis.
Concentrations of credit risk and other risks and uncertainties	us-gaap_ConcentrationRiskCreditRisk	us-gaap_	dtr-types:textBlockItemType	na	duration	***Concentrations of credit risk and other risks and uncertainties*** Financial instruments that potentially subject us to a concentration of credit risk consist of cash, cash equivalents, restricted cash, marketable securities and accounts receivable. Our cash and cash equivalents are primarily held by financial

						institutions in the United States. Such deposits may exceed federally insured limits.
Fair value of financial instruments	us-gaap_FairValueOfFinancialInstrumentsPolicy	us-gaap_	dtr-types:textBlockItemType	na	duration	Fair value of financial instrumentsOur financial instruments consist principally of cash and cash equivalents, marketable securities, accounts payable, accrued liabilities, finance leases and liabilities associated with business combinations. The carrying amounts of certain of these financial instruments, including cash and cash equivalents, accounts receivable, accounts payable and accrued and other current liabilities approximate their current fair value due to the relatively short-term nature of these accounts. Based on borrowing rates available to us, the carrying value of our finance leases approximate their fair values. Liabilities associated with business combinations are recorded at their estimated fair value.
Prior period reclassifications	us-gaap_PriorPeriodReclassificationAdjustmentDescription	us-gaap_	dtr-types:textBlockItemType	na	duration	***Prior period reclassifications*** We have reclassified certain amounts in prior periods to conform with current presentation. During the current period, we have disclosed the change in fair value of our contingent consideration separately in our statements of operations; these amounts are general and administrative in nature and were disclosed in general and administrative expense previous periods.
Recent accounting pronouncements						***Recent accounting pronouncements*** We evaluate all Accounting

						Standards Updates (“ASUs”) issued by the Financial Accounting Standards Board ("FASB") for consideration of their applicability. ASUs not included in the disclosures in this report were assessed and determined to be either not applicable or are not expected to have a material impact on our consolidated financial statements. ***Recently adopted accounting pronouncements*** In August 2020, the FASB issued ASU 2020-06, *Accounting for Convertible Instruments and Contracts in an Entity's Own Equity*, which simplifies the accounting for certain convertible instruments, amends the guidance on derivative scope exceptions for contracts in an entity's own equity, and modifies the guidance on diluted earnings per share calculations as a result of these changes. This new standard is effective for our interim and annual periods beginning January 1, 2022, and earlier adoption is permitted. We elected to adopt the amendments on a modified retrospective basis effective January 1, 2021, which required a cumulative-effect adjustment to retained earnings. The cumulative-effect adjustment resulted in a decrease in accumulated deficit of $17.0 million related to the reversal of the equity component and associated issuance costs as well as adjustment of the related amortization costs of our existing convertible senior notes due in 2024. Reporting periods beginning on or after January 1, 2021 are presented under this new guidance while prior periods have not been adjusted and continue to be reported in accordance with
us-gaap_NewAccountingPronouncementsPolicyPolicyTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration		

	our historic accounting under GAAP. See further information about our Senior Convertible Notes in Note 8, “Commitments and contingencies.”

+ Details

Cover - Summary of significant accounting policies (Tables)

Summary of significant accounting policies (Tables)	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Accounting Policies [Abstract]	us-gaap_AccountingPoliciesAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Summary of restrictions on cash and cash equivalents	us-gaap_ScheduleOfRestrictedCashAndCashEquivalentsTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	The following table provides a reconciliation of cash, cash equivalents and restricted cash reported within the consolidated balance sheets that sum to the total of the same amounts shown in the consolidated statements of cash flows (in thousands): September 30, 2021 / December 31, 2020 Cash and cash equivalents $ 921,634 / $124,794 Restricted cash 10,275 / 6,686 Total cash, cash equivalents and restricted cash $ 931,909 / $131,480 The restricted cash is related to security deposits on our leases.
Schedule of cash and cash equivalents	us-gaap_ScheduleOfCashAndCashEquivalentsTableTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	The following table provides a reconciliation of cash, cash equivalents and restricted cash reported within the consolidated balance sheets that sum to the total of the same amounts shown in the consolidated statements of cash flows (in thousands): September 30, 2021 / December 31, 2020 Cash and cash equivalents $ 921,634 / $124,794 Restricted cash 10,275 / 6,686 Total cash, cash equivalents and restricted cash $ 931,909 / $131,480

+ Details

Cover - Revenue, accounts receivable and deferred revenue (Tables)

Revenue, accounts receivable and deferred revenue (Tables)	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Revenue from Contract with Customer [Abstract]	us-gaap_RevenueFromContractWithCustomerAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Schedule of disaggregated revenue	us-gaap_DisaggregationOfRevenueTableTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	Our revenue as disaggregated by payer category and revenue subtype was as follows (in thousands):

	Three Months Ended September 30, 2021				
	Patient				
	Insurance	Direct	Biopharma partner	Other business-to-business	Total
Test revenue:					
Centralized	$ 69,009	$10,999	$ 10,390	$ 12,591	$102,989
Decentralized	—	—	374	8,313	8,687
Total test revenue	69,009	10,999	10,764	20,904	111,676
Other revenue	—	—	1,774	945	2,719
Total revenue	$ 69,009	$10,999	$ 12,538	$ 21,849	$114,395

	Three Months Ended September 30, 2020				
	Patient				
	Insurance	Direct	Biopharma partner	Other business-to-business	Total
Test revenue:					
Centralized	$ 46,932	$6,379	$ 5,287	$ 8,728	$ 67,326
Total test revenue	46,932	6,379	5,287	8,728	67,326
Other revenue	—	—	848	554	1,402
Total revenue	$ 46,932	$6,379	$ 6,135	$ 9,282	$ 68,728

	Nine Months Ended September 30, 2021				
	Patient				
	Insurance	Direct	Biopharma partner	Other business-to-business	Total
Test revenue:					
Centralized	$201,154	$30,471	$ 29,650	$ 34,939	$296,214
Decentralized	—	—	1,011	25,223	26,234
Total test revenue	201,154	30,471	30,661	60,162	322,448
Other revenue	—	—	8,394	3,486	11,880
Total revenue	$201,154	$30,471	$ 39,055	$ 63,648	$334,328

	Nine Months Ended September 30, 2020				
	Patient				
	Insurance	Direct	Biopharma partner	Other business-to-business	Total
Test revenue:					
Centralized	$121,993	$16,468	$ 13,887	$ 23,155	$175,503
Total test revenue	121,993	16,468	13,887	23,155	175,503
Other revenue	—	—	1,777	1,887	3,664
Total revenue	$121,993	$16,468	$ 15,664	$ 25,042	$179,167

Schedule of change in estimate	us-gaap_ScheduleOfChangeInAccountingEstimateTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	Updates to our estimates resulted in the following changes to revenue, loss from operations and basic and diluted net loss per share (in millions, except per share amounts):

	Three Mon Septem
	2021
Revenue	$ 4.0
Loss from operations	$ (4.0)
Net loss per share, basic and diluted	$ (0.02)

+ References + Details

Cover - Business combinations (Tables)

Business combinations (Tables)	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Business Combination and Asset Acquisition [Abstract]	us-gaap_BusinessCombinationAndAssetAcquisitionAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Summary of purchase price and post-combination expense	us-gaap_BusinessCombinationSeparatelyRecognizedTransactionsTableTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	The following table summarizes the purchase price and post-combination expense recorded as a part of the acquisition of One Codex (in thousands): Purchase Price / Post-combination Expense Cash transferred $16,504 / $ 783 Hold-back consideration - common stock 8,113 / 359 Common stock transferred 58,774 / 2,600 Total $83,391 / $ 3,742 The following table summarizes the purchase price recorded as a part of the acquisition of Genosity (in thousands): Purchase Price Cash transferred $ 119,959 Hold back and other consideration 8,774 Common stock transferred 67,308 Total $ 196,041 The following table summarizes the purchase price recorded as a part of the acquisition of Ciitizen (in thousands): Purchase Price Cash transferred $ 87,361
Summary of fair values of assets acquired and liabilities assumed	us-gaap_ScheduleOfRecognizedIdentifiedAssetsAcquiredAndLiabilitiesAssumedTableTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	The following table summarizes the fair values of assets acquired and liabilities assumed through our acquisition of One Codex at the date of acquisition (in thousands): Cash $ 1,549 Accounts receivable 684 Developed technology 23,841 Customer relationships 440 Total identifiable assets acquired 26,514 Other liabilities (415) Deferred tax liability (6,150) Net identifiable assets acquired 19,949 Goodwill 63,442 Total purchase price $ 83,391 The following table summarizes the fair values of assets acquired and liabilities assumed through our acquisition of Genosity at the date of acquisition (in thousands): Cash $ 906 Accounts receivable 355 Developed technology 76,500 Other assets 3,732 Total identifiable assets acquired 81,493 Other liabilities (2,852) Deferred tax liability (17,600) Net identifiable assets acquired 61,041 Goodwill 135,000 Total purchase price $ 196,041 The following table summarizes the fair values of assets acquired and liabilities assumed through our acquisition of Ciitizen at the date of acquisition (in thousands):

+ Details

Cover - Goodwill and intangible assets (Tables)

Goodwill and intangible assets (Tables)	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Goodwill and Intangible Assets Disclosure [Abstract]	us-gaap_GoodwillAndIntangibleAssetsDisclosureAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Summary of goodwill	us-gaap_ScheduleOfGoodwillTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	The changes in the carrying amounts of goodwill were as follows (in thousands):

Balance as of December 31, 2020	$ 1,863,623
Goodwill adjustment	(1,176)
Goodwill acquired	420,612
Balance as of September 30, 2021	$ 2,283,059

Schedule of intangible assets, indefinite-lived — us-gaap_ScheduleOfIndefiniteLivedIntangibleAssetsTableTextBlock (us-gaap_, dtr-types:textBlockItemType, na, duration)

The following table presents details of our intangible assets (amounts in thousands, useful lives in years):

	September 30, 2021				December 31, 2020			
	Cost	Accumulated Amortization	Net	Weighted-Average Useful Life	Cost	Accumulated Amortization	Net	Weighted-Average Useful Life
Customer relationships	$ 41,515	$ (11,896)	$ 29,619	10.8	$ 41,075	$ (8,292)	$ 32,783	10.8
Developed technology	624,663	(66,280)	558,383	10.3	397,563	(31,013)	366,550	10.6
Non-compete agreement	286	(272)	14	5.0	286	(229)	57	5.0
Tradename	21,085	(1,767)	19,318	12.0	21,085	(447)	20,638	12.0
Patent assets and licenses	495	(128)	367	15.0	496	(103)	393	15.0
Right to develop new technology	19,359	(1,291)	18,068	15.0	19,359	(323)	19,036	15.0
In-process research and development	542,388	—	542,388	n/a	542,388	—	542,388	n/a
	$1,249,791	$ (81,634)	$1,168,157	10.5	$1,022,252	$ (40,407)	$981,845	10.9

Schedule of intangible assets, finite-lived — us-gaap_ScheduleOfFiniteLivedIntangibleAssetsTableTextBlock (us-gaap_, dtr-types:textBlockItemType, na, duration)

The following table presents details of our intangible assets (amounts in thousands, useful lives in years):

	September 30, 2021				December 31, 2020			
	Cost	Accumulated Amortization	Net	Weighted-Average Useful Life	Cost	Accumulated Amortization	Net	Weighted-Average Useful Life
Customer relationships	$ 41,515	$ (11,896)	$ 29,619	10.8	$ 41,075	$ (8,292)	$ 32,783	10.8
Developed technology	624,663	(66,280)	558,383	10.3	397,563	(31,013)	366,550	10.6
Non-compete agreement	286	(272)	14	5.0	286	(229)	57	5.0
Tradename	21,085	(1,767)	19,318	12.0	21,085	(447)	20,638	12.0
Patent assets and licenses	495	(128)	367	15.0	496	(103)	393	15.0
Right to develop new technology	19,359	(1,291)	18,068	15.0	19,359	(323)	19,036	15.0
In-process research and development	542,388	—	542,388	n/a	542,388	—	542,388	n/a
	$1,249,791	$ (81,634)	$1,168,157	10.5	$1,022,252	$ (40,407)	$981,845	10.9

Summary of estimated future amortization expense of intangible assets with finite lives — us-gaap_ScheduleofFiniteLivedIntangibleAssetsFutureAmortizationExpenseTableTextBlock (us-gaap_, dtr-types:textBlockItemType, na, duration)

The following table summarizes our estimated future amortization expense of intangible assets with finite lives as of September 30, 2021 (in thousands):

2021 (remainder of year)	$ 17,607
2022	69,025
2023	68,012
2024	67,734
2025	65,980
Thereafter	337,411
Total estimated future amortization expense	$ 625,769

+ Details

Cover - Balance sheet components (Tables)

Balance sheet components (Tables)	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Balance Sheet Related Disclosures [Abstract]	us-gaap_BalanceSheetRelatedDisclosuresAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Schedule of inventory	us-gaap_ScheduleOfInventoryCurrentTableTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	***Inventory*** Inventory consisted of the following (in thousands): Raw materials $ 26,318 ($ 21,324) Work in progress 3,215 (8,847) Finished goods 1,100 (1,859) Total inventory $ 30,633 ($ 32,030)
Schedule of property and equipment	us-gaap_PropertyPlantAndEquipmentTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	Property and equipment consisted of the following (in thousands): Leasehold improvements $ 31,059 ($ 26,516) Laboratory equipment 61,994 (45,342) Computer equipment 15,829 (10,939) Software 867 (566) Furniture and fixtures 2,046 (1,967) Automobiles 58 (58) Construction-in-progress 33,672 (12,061) Total property and equipment, gross 145,525 (97,449) Accumulated depreciation and amortization (44,525) (31,347) Total property and equipment, net $ 101,000 ($ 66,102)
Schedule of accrued liabilities	us-gaap_ScheduleOfAccruedLiabilitiesTableTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	Accrued liabilities consisted of the following (in thousands): Accrued compensation and related expenses $ 40,037 ($ 25,221) Accrued interest 583 (2,333) Compensation and other liabilities associated with business combinations 15,377 (25,600) Deferred revenue 8,261 (6,378) Other 40,050 (26,526) Total accrued liabilities $ 104,308 ($ 86,058)
Schedule of other long-term liabilities	us-gaap_OtherNoncurrentLiabilitiesTableTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	Other long-term liabilities consisted of the following (in thousands): Deferred revenue, non-current 678 ( ) Compensation and other liabilities associated with business combinations, non-current 39,625 ( ) Other 15,879 ( ) Total other long-term liabilities $ 56,182 ($)

+ Details

Cover - Fair value measurements (Tables)

Fair value measurements (Tables)	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Fair Value Disclosures [Abstract]	us-gaap_FairValueDisclosuresAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Financial instruments at fair value on a recurring basis	us-gaap_ScheduleOfFairValueAssetsAndLiabilitiesMeasuredOnRecurringBasisTableTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	The following tables set forth the fair value of our financial instruments that were measured at fair value on a recurring basis (in thousands):

	September 30, 2021					
	Amortized Cost	Unrealized Gains	Unrealized Losses	Estimated Fair Value	Level 1	Level 2	Level 3
Financial assets:							
Money market funds	$ 864,694	$ —	$ —	$ 864,694	$ 864,694	$ —	$ —
U.S. Treasury notes	274,398	19	—	274,417	274,417	—	—
U.S. government agency securities	46,046	2	—	46,048	—	46,048	—
Total financial assets	$1,185,138	$ 21	$ —	$1,185,159	$1,139,111	$46,048	$ —
Financial liabilities:							
Stock payable liability				$ 34,087	$ —	$ —	$34,087
Contingent consideration				1,685	—	—	1,685
Total financial liabilities				$ 35,772	$ —	$ —	$35,772

	September 30, 2021
Reported as:	
Cash equivalents	$ 854,419
Restricted cash	10,275
Marketable securities	320,465
Total cash equivalents, restricted cash, and marketable securities	$ 1,185,159
Accrued liabilities	$ —
Other long-term liabilities	35,772
Total liabilities	$ 35,772

	December 31, 2020						
	Amortized Cost	Unrealized Gains	Unrealized Losses	Estimated Fair Value	Level 1	Level 2	Level 3
Financial assets:							
Money market funds	$ 83,109	$ —	$ —	$ 83,109	$ 83,109	$ —	$ —
U.S. Treasury notes	164,894	7	(15)	164,886	164,886	—	—
U.S. government agency securities	64,291	9	—	64,300	—	64,300	—
Total financial assets	$312,294	$ 16	$ (15)	$312,295	$247,995	$64,300	$ —
Financial liabilities:							
Stock payable liability				$ 39,237	$ —	$ —	$ 39,237
Contingent consideration				796,639	—	—	796,639
Total financial liabilities				$835,876	$ —	$ —	$835,876

	December 31, 2020
Reported as:	
Cash equivalents	$ 76,423
Restricted cash	6,686
Marketable securities	229,186
Total cash equivalents, restricted cash, and marketable securities	$ 312,295
Accrued liabilities	$ 10,592
Other long-term liabilities	825,284
Total liabilities	$ 835,876

+ Details

Cover - Commitments and contingencies (Tables)

Commitments and contingencies (Tables)	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Commitments and Contingencies Disclosure [Abstract]	us-gaap_CommitmentsAndContingenciesDisclosureAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Components of debt	us-gaap_ScheduleOfDebtInstrumentsTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	Our 2024 Notes and 2028 Notes (collectively, our "convertible senior notes") consisted of the following (in thousands):

	September 30, 2021
Outstanding principal	$1,499,99
Unamortized debt discount and issuance costs	(37,49
Net carrying amount, liability component	$1,462,49

+ Details

Cover - Stockholders' equity (Tables)

Stockholders' equity (Tables)	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Equity [Abstract]	us-gaap_EquityAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Schedule of convertible preferred and common stock	us-gaap_ScheduleOfStockByClassTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	

Shares of convertible preferred and common stock were as follows (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2021	2020	2021	2020
Convertible preferred stock:				
Shares outstanding, beginning of period	125	125	125	125
Conversion into common stock	(125)	—	(125)	—
Shares outstanding, end of period	—	125	—	125
Common stock:				
Shares outstanding, beginning of period	203,018	131,289	185,886	98,796
Common stock issued in connection with public offering	—	—	8,932	23,058
Common stock issued on exercise of stock options, net	1,361	245	1,940	553
Common stock issued pursuant to vesting of RSUs	718	1,322	4,101	4,803
Common stock issued pursuant to exercises of warrants	—	54	208	202
Common stock issued pursuant to employee stock purchase plan	—	—	271	342
Common stock issued pursuant to business combinations	21,005	358	24,764	5,514
Common stock issued upon conversion of preferred stock	125	—	125	—
Shares outstanding, end of period	226,227	133,268	226,227	133,268

+ Details

Cover - Stock incentive plans (Tables)

Stock incentive plans (Tables)	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Share-based Payment Arrangement [Abstract]	us-gaap_DisclosureOfCompensationRelatedCostsSharebasedPaymentsAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Schedule of activity under the plans	us-gaap_ScheduleOfShareBasedCompensationActivityTableTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	Activity under the 2010 Plan and the 2015 Plan is set forth below (in thousands, except per share amounts and years):
Summary of RSU activity	us-gaap_ScheduleOfShareBasedCompensationRestrictedStockUnitsAwardActivityTableTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	The following table summarizes RSU activity (in thousands, except per share data):
Summary of stock based compensation expense	us-gaap_ScheduleOfCompensationCostForShareBasedPaymentArrangementsAllocationOfShareBasedCompensationCostsByPlanTableTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	The following table summarizes stock-based compensation expense included in the consolidated statements of operations (in thousands):

Activity under the 2010 Plan and the 2015 Plan is set forth below (in thousands, except per share amounts and years):

	Shares Available For Grant	Stock Options Outstanding	Weighted-Average Exercise Price Per Share	Weighted-Average Remaining Contractual Life (Years)	Aggregate Intrinsic Value
Balances at December 31, 2020	7,447	4,877	$ 7.75	6.8	$166,130
Additional shares reserved	16,738	—			
Options granted	(244)	244	34.90		
Options cancelled	40	(40)	26.64		
Options exercised	—	(1,940)	4.21		
RSUs and PRSUs granted	(13,853)	—			
RSUs and PRSUs cancelled	842	—			
Balances at September 30, 2021	10,970	3,141	$ 11.80	5.8	$ 53,737
Options exercisable at September 30, 2021		2,687	$ 9.45	5.3	$ 51,080
Options vested and expected to vest at September 30, 2021		3,113	$ 11.74	5.8	$ 53,440

The following table summarizes RSU activity (in thousands, except per share data):

	Number of Shares	Weighted- Average Grant Date Fair Value Per Share
Balance at December 31, 2020	6,602	$ 12.89
RSUs and PRSUs granted	13,853	$ 30.53
RSUs and PRSUs vested	(4,101)	$ 21.17
RSUs and PRSUs cancelled	(842)	$ 25.53
Balance at September 30, 2021	15,512	$ 25.76

The following table summarizes stock-based compensation expense included in the consolidated statements of operations (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2021	2020	2021	2020
Cost of revenue	$ 2,010	$ 2,104	$ 9,668	$ 5,321
Research and development	12,104	7,185	58,441	70,954
Selling and marketing	2,457	4,078	12,797	9,198
General and administrative	8,875	7,838	50,876	16,856
Total stock-based compensation expense	$ 25,446	$ 21,205	$ 131,782	$ 102,329

+ Details

Cover - Net loss per share (Tables)

Net loss per share (Tables)	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Earnings Per Share [Abstract]	us-gaap_EarningsPerShareAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Schedule of earnings per share, basic and diluted	us-gaap_ScheduleOfEarningsPerShareBasicAndDilutedTableTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	The following table presents the calculation of basic and diluted net loss per share (in thousands, except per share amounts):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2021	2020	2021	2020
Net loss	$(198,176)	$(102,902)	$(173,882)	$(367,832)
Shares used in computing net loss per share, basic and diluted	218,384	132,484	205,587	119,386
Net loss per share, basic and diluted	$ (0.91)	$ (0.78)	$ (0.85)	$ (3.08)

Schedule of antidilutive securities excluded from computation of earnings per share	us-gaap_ScheduleOfAntidilutiveSecuritiesExcludedFromComputationOfEarningsPerShareTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	The following common stock equivalents have been excluded from diluted net loss per share because their inclusion would be anti-dilutive (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2021	2020	2021	2020
Shares of common stock subject to outstanding options	3,884	3,365	4,371	3,419
Shares of common stock subject to outstanding warrants	—	330	36	396
Shares of common stock subject to outstanding RSUs and PRSUs	8,769	7,331	7,730	7,534
Shares of common stock pursuant to ESPP	368	312	304	316
Shares of common stock underlying Series A convertible preferred stock	125	125	125	125
Shares of common stock subject to convertible senior notes conversion	38,403	8,074	38,403	8,074
Total shares of common stock equivalents	51,549	19,537	50,969	19,864

+ Details

Cover - Geographic information (Tables)

Geographic information (Tables)	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021
Segments, Geographical Areas [Abstract]	us-gaap_SegmentsGeographicalAreasAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Schedule of revenue by country	us-gaap_RevenueFromExternalCustomersByGeographicAreasTableTextBlock	us-gaap_	dtr-types:textBlockItemType	na	duration	The following presents revenue by country (in thousands):

	Three Months Ended September 30,		Nine Mont Septem
	2021	2020	2021
United States	$100,957	$64,322	$293,868
Rest of world	13,438	4,406	40,460
Total revenue	$114,395	$68,728	$334,328

+ References + Details

Cover - Organization and description of business (Details)

Organization and description of business (Details)	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021 Segment
Organization, Consolidation and Presentation of Financial Statements [Abstract]	us-gaap_OrganizationConsolidationAndPresentationOfFinancialStatementsAbstract	us-gaap_	xbrli:stringItemType	na	duration	
Number of operating segments	us-gaap_NumberOfOperatingSegments	us-gaap_	xbrli:integerItemType	na	duration	1

+ References + Details

Cover - Summary of significant accounting policies - Reconciliation of cash, cash equivalents and restricted cash (Details)

Summary of significant accounting policies - Reconciliation of cash, cash equivalents and restricted cash (Details) - USD ($) $ in Thousands	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Dec. 31, 2020	Sep. 30, 2020	Dec. 31, 2019
Accounting Policies [Abstract]	us-gaap_AccountingPoliciesAbstract	us-gaap_	xbrli:stringItemType	na	duration				
Cash and cash equivalents	us-gaap_CashAndCashEquivalentsAtCarryingValue	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 921,634	$ 124,794		
Restricted cash	us-gaap_RestrictedCashAndCashEquivalents	us-gaap_	xbrli:monetaryItemType	debit	instant	10,275	6,686		
Total cash, cash equivalents and restricted cash	us-gaap_CashCashEquivalentsRestrictedCashAndRestrictedCashEquivalents	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 931,909	$ 131,480	$ 113,121	$ 157,572

+ Details

Cover - Summary of significant accounting policies - Additional information (Details)

Summary of significant accounting policies - Additional information (Details) - USD ($) $ in Thousands	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Jun. 30, 2021	Jan. 01, 2021	Dec. 31, 2020	Sep. 30, 2020	Jun. 30, 2020	Dec. 31, 2019
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration							
Increase (decrease) in stockholders' equity	us-gaap_StockholdersEquity	us-gaap_	xbrli:monetaryItemType	credit	instant	$ 3,106,717			$ 1,976,293	$ 416,551		
Accumulated deficit:	us-gaap_StatementEquityComponentsAxis=us-gaap_RetainedEarningsMember		na									
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration							
Increase (decrease) in stockholders' equity	us-gaap_StockholdersEquity	us-gaap_	xbrli:monetaryItemType	credit	instant	$ (1,517,724)	$ (1,319,548)		(1,360,847)	$ (1,126,509)	$ (1,023,607)	$ (758,677)
Accumulated deficit: | Cumulative effect of adoption of ASU 2020-06	us-gaap_StatementEquityComponentsAxis=us-gaap_RetainedEarningsMember		na									
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration							
Increase (decrease) in stockholders' equity	us-gaap_StockholdersEquity	us-gaap_	xbrli:monetaryItemType	credit	instant			$ 17,000	$ 17,005			

+ References + Details

Cover - Revenue, accounts receivable and deferred revenue - Schedule of disaggregated revenue (Details)

Revenue, accounts receivable and deferred revenue - Schedule of disaggregated revenue (Details) - USD ($) $ in Thousands	XBRL Details					3 Months Ended		9 Months Ended	
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Sep. 30, 2020	Sep. 30, 2021	Sep. 30, 2020
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 114,395	$ 68,728	$ 334,328	$ 179,167
Patient Insurance	srt_MajorCustomersAxis=nvta_PatientInsuranceMember		na						
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	69,009	46,932	201,154	121,993
Patient Direct	srt_MajorCustomersAxis=nvta_PatientDirectMember		na						
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	10,999	6,379	30,471	16,468
Biopharma partner	srt_MajorCustomersAxis=nvta_PartnerMember		na						
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	12,538	6,135	39,055	15,664
Other business-to-business	srt_MajorCustomersAxis=nvta_OtherBusinessToBusinessMember		na						
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	21,849	9,282	63,648	25,042
Test revenue	srt_ProductOrServiceAxis=nvta_DiagnosticTestsMember		na						
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	111,676	67,326	322,448	175,503
Test revenue | Patient Insurance	srt_ProductOrServiceAxis=nvta_DiagnosticTestsMember		na						
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	69,009	46,932	201,154	121,993
Test revenue | Patient Direct	srt_ProductOrServiceAxis=nvta_DiagnosticTestsMember		na						
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	10,999	6,379	30,471	16,468
Test revenue | Biopharma partner	srt_ProductOrServiceAxis=nvta_DiagnosticTestsMember		na						
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	10,764	5,287	30,661	13,887
Test revenue | Other business-to-business	srt_ProductOrServiceAxis=nvta_DiagnosticTestsMember		na						
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	20,904	8,728	60,162	23,155
Centralized	srt_ProductOrServiceAxis=nvta_TestRevenueCentralizedMember		na						
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	102,989	67,326	296,214	175,503
Centralized | Patient Insurance	srt_ProductOrServiceAxis=nvta_TestRevenueCentralizedMember		na						
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	69,009	46,932	201,154	121,993
Centralized | Patient Direct	srt_ProductOrServiceAxis=nvta_TestRevenueCentralizedMember		na						
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	10,999	6,379	30,471	16,468
Centralized | Biopharma partner	srt_ProductOrServiceAxis=nvta_TestRevenueCentralizedMember		na						
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	10,390	5,287	29,650	13,887
Centralized | Other business-to-business	srt_ProductOrServiceAxis=nvta_TestRevenueCentralizedMember		na						
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	12,591	8,728	34,939	23,155
Decentralized	srt_ProductOrServiceAxis=nvta_TestRevenueDecentralizedMember		na						
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	8,687		26,234	

Decentralized | Patient Insurance	srt_ProductOrServiceAxis=nvta_TestRevenueDecentralizedMember		na							
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	0		0		
Decentralized | Patient Direct	srt_ProductOrServiceAxis=nvta_TestRevenueDecentralizedMember		na							
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	0		0		
Decentralized | Biopharma partner	srt_ProductOrServiceAxis=nvta_TestRevenueDecentralizedMember		na							
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	374		1,011		
Decentralized | Other business-to-business	srt_ProductOrServiceAxis=nvta_TestRevenueDecentralizedMember		na							
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	8,313		25,223		
Other revenue	srt_ProductOrServiceAxis=nvta_CollaborationAndGenomeNetworkMember		na							
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	2,719	1,402	11,880	3,664	
Other revenue | Patient Insurance	srt_ProductOrServiceAxis=nvta_CollaborationAndGenomeNetworkMember		na							
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	0	0	0	0	
Other revenue | Patient Direct	srt_ProductOrServiceAxis=nvta_CollaborationAndGenomeNetworkMember		na							
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	0	0	0	0	
Other revenue | Biopharma partner	srt_ProductOrServiceAxis=nvta_CollaborationAndGenomeNetworkMember		na							
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	1,774	848	8,394	1,777	
Other revenue | Other business-to-business	srt_ProductOrServiceAxis=nvta_CollaborationAndGenomeNetworkMember		na							
Disaggregation of Revenue [Line Items]	us-gaap_DisaggregationOfRevenueLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 945	$ 554	$ 3,486	$ 1,887	

+ References + Details

Cover - Revenue, accounts receivable and deferred revenue - Schedule of change in estimate (Details)

Revenue, accounts receivable and deferred revenue - Schedule of change in estimate (Details) - USD ($) $ / shares in Units, $ in Thousands	XBRL Details					3 Months Ended		9 Months Ended	
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Sep. 30, 2020	Sep. 30, 2021	Sep. 30, 2020
Revenue, Initial Application Period Cumulative Effect Transition [Line Items]	us-gaap_RevenueInitialApplicationPeriodCumulativeEffectTransitionLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 114,395	$ 68,728	$ 334,328	$ 179,167
Loss from operations	us-gaap_OperatingIncomeLoss	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 193,312	$ 80,823	$ 177,067	$ 320,689
Net loss per share, diluted (in dollars per share)	us-gaap_IncomeLossFromContinuingOperationsPerDilutedShare	us-gaap_	dtr-types:perShareItemType	na	duration	$ (0.02)	$ (0.01)	$ (0.06)	$ (0.03)
Change in estimate of revenue recognition	us-gaap_AdjustmentsForChangeInAccountingPrincipleAxis=nvta_ChangeInEstimateOfRevenueRecognitionMember		na						
Revenue, Initial Application Period Cumulative Effect Transition [Line Items]	us-gaap_RevenueInitialApplicationPeriodCumulativeEffectTransitionLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 4,000	$ 700	$ 12,000	$ 3,000
Loss from operations	us-gaap_OperatingIncomeLoss	us-gaap_	xbrli:monetaryItemType	credit	duration	$ (4,000)	$ (700)	$ (12,000)	$ (3,000)
Net loss per share, basic (in dollars per share)	us-gaap_IncomeLossFromContinuingOperationsPerBasicShare	us-gaap_	dtr-types:perShareItemType	na	duration	$ (0.02)	$ (0.01)	$ (0.06)	$ (0.03)

+ References + Details

Cover - Revenue, accounts receivable and deferred revenue - Additional information (Details)

Revenue, accounts receivable and deferred revenue - Additional information (Details) - USD ($) $ in Millions	XBRL Details					1 Months Ended		3 Months Ended	9 Months Ended	
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Jan. 31, 2021	Apr. 30, 2020	Sep. 30, 2021	Sep. 30, 2021	Dec. 31, 2020
Restructuring Cost and Reserve [Line Items]	us-gaap_RestructuringCostAndReserveLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Contract receivable	us-gaap_ContractWithCustomerAssetNetCurrent	us-gaap_	xbrli:monetaryItemType	debit	instant			$ 3.7	$ 3.7	$ 4.3
Deferred revenue, revenue recognized	us-gaap_ContractWithCustomerLiabilityRevenueRecognized	us-gaap_	xbrli:monetaryItemType	credit	duration			$ 2.3	$ 2.7	
CARES Act	us-gaap_UnusualOrInfrequentItemAxis=nvta_CARESActMember		na							
Restructuring Cost and Reserve [Line Items]	us-gaap_RestructuringCostAndReserveLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Income received under the CARES Act	us-gaap_UnusualOrInfrequentItemNetGainLoss	us-gaap_	xbrli:monetaryItemType	debit	duration	$ 2.3	$ 3.8			

+ References + Details

Cover - Business combinations - Singular Bio (Details)

Business combinations - Singular Bio (Details) - USD ($) shares in Millions	XBRL Details					1 Months Ended	3 Months Ended		9 Months Ended	
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Jun. 30, 2019	Sep. 30, 2021	Sep. 30, 2020	Sep. 30, 2021	Sep. 30, 2020
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Stock-based compensation expense (income)	us-gaap_AllocatedShareBasedCompensationExpense	us-gaap_	xbrli:monetaryItemType	debit	duration		$ 25,446,000	$ 21,205,000	$ 131,782,000	$ 102,329,000
Singular Bio	us-gaap_BusinessAcquisitionAxis=nvta_SingularBioMember		na							
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Percentage of diluted interest acquired	us-gaap_BusinessAcquisitionPercentageOfVotingInterestsAcquired	us-gaap_	dtr-types:percentItemType	na	instant	100.00%				
Business combination, total purchase consideration	us-gaap_BusinessCombinationConsiderationTransferred1	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 57,300,000				
Common stock transferred	us-gaap_BusinessCombinationConsiderationTransferredEquityInterestsIssuedAndIssuable	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 53,900,000				
Business acquisition common stock issued (in shares)	us-gaap_BusinessAcquisitionEquityInterestsIssuedOrIssuableNumberOfSharesIssued	us-gaap_	xbrli:sharesItemType	na	duration	2.5				
RSU | Stock incentive plans | Singular Bio	us-gaap_AwardTypeAxis=us-gaap_RestrictedStockUnitsRSUMember		na							
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Business acquisition, value of units granted	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardEquityInstrumentsOtherThanOptionsAggregateIntrinsicValueOutstanding	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 90,000,000				
RSU - Time based | Stock incentive plans | Singular Bio	us-gaap_AwardTypeAxis=nvta_RestrictedStockUnitsPeriodofTimeMember		na							
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Business acquisition, value of units granted	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardEquityInstrumentsOtherThanOptionsAggregateIntrinsicValueOutstanding	us-gaap_	xbrli:monetaryItemType	debit	instant	45,000,000				
Stock-based compensation expense (income)	us-gaap_AllocatedShareBasedCompensationExpense	us-gaap_	xbrli:monetaryItemType	debit	duration		0	6,300,000	0	24,900,000
PRSU | Stock incentive plans | Singular Bio	us-gaap_AwardTypeAxis=us-gaap_PerformanceSharesMember		na							
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Business acquisition, value of units granted	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardEquityInstrumentsOtherThanOptionsAggregateIntrinsicValueOutstanding	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 45,000,000				
Stock-based compensation expense (income)	us-gaap_AllocatedShareBasedCompensationExpense	us-gaap_	xbrli:monetaryItemType	debit	duration		$ (700,000)	$ 6,500,000	$ 1,200,000	$ 23,600,000
First anniversary | RSU | Stock incentive plans	us-gaap_VestingAxis=us-gaap_ShareBasedCompensationAwardTrancheOneMember		na							
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Vesting rate upon anniversaries	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardAwardVestingRightsPercentage	us-gaap_	dtr-types:percentItemType	na	duration				33.33%	
First anniversary | RSU | Stock incentive plans | Singular Bio	us-gaap_VestingAxis=us-gaap_ShareBasedCompensationAwardTrancheOneMember		na							
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Vesting rate upon anniversaries	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardAwardVestingRightsPercentage	us-gaap_	dtr-types:percentItemType	na	duration	33.33%				
Second anniversary | RSU | Stock incentive plans	us-gaap_VestingAxis=us-gaap_ShareBasedCompensationAwardTrancheTwoMember		na							
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Vesting rate upon anniversaries	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardAwardVestingRightsPercentage	us-gaap_	dtr-types:percentItemType	na	duration				33.33%	
Second anniversary | RSU | Stock incentive plans | Singular Bio	us-gaap_VestingAxis=us-gaap_ShareBasedCompensationAwardTrancheTwoMember		na							
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Vesting rate upon anniversaries	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardAwardVestingRightsPercentage	us-gaap_	dtr-types:percentItemType	na	duration	33.33%				
Third anniversary | RSU | Stock incentive plans	us-gaap_VestingAxis=us-gaap_ShareBasedCompensationAwardTrancheThreeMember		na							
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Vesting rate upon anniversaries	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardAwardVestingRightsPercentage	us-gaap_	dtr-types:percentItemType	na	duration				33.33%	
Third anniversary | RSU | Stock incentive plans | Singular Bio	us-gaap_VestingAxis=us-gaap_ShareBasedCompensationAwardTrancheThreeMember		na							
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Vesting rate upon anniversaries	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardAwardVestingRightsPercentage	us-gaap_	dtr-types:percentItemType	na	duration	33.33%				

+ References + Details

Cover - Business combinations - Jungla (Details)

Business combinations - Jungla (Details) - Jungla - USD ($)	XBRL Details					1 Months Ended		
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Jul. 31, 2019	Sep. 30, 2021	Jun. 30, 2021
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration			
Percentage of diluted interest acquired	us-gaap_BusinessAcquisitionPercentageOfVotingInterestsAcquired	us-gaap_	dtr-types:percentItemType	na	instant	100.00%		
Business combination, total purchase consideration	us-gaap_BusinessCombinationConsiderationTransferred1	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 59,000,000		
Common stock transferred	us-gaap_BusinessCombinationConsiderationTransferredEquityInterestsIssuedAndIssuable	us-gaap_	xbrli:monetaryItemType	credit	duration	44,900,000		
Ongoing development post-close milestones	us-gaap_ContingentConsiderationByTypeAxis=nvta_ContingentConsiderationOngoingDevelopmentPostcloseMilestonesMember		na					
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration			
Contingent consideration	us-gaap_BusinessCombinationContingentConsiderationLiability	us-gaap_	xbrli:monetaryItemType	credit	instant	$ 10,700,000	$ 0	$ 3,600,000

+ References + Details

Cover - Business combinations - Diploid (Details)

Business combinations - Diploid (Details) - Diploid shares in Millions, $ in Millions	XBRL Details					1 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Mar. 31, 2020 USD ($) shares
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration	
Percentage of diluted interest acquired	us-gaap_BusinessAcquisitionPercentageOfVotingInterestsAcquired	us-gaap_	dtr-types:percentItemType	na	instant	100.00%
Business combination, total purchase consideration | $	us-gaap_BusinessCombinationConsiderationTransferred1	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 82.3
Indemnification obligations	us-gaap_ContingentConsiderationByTypeAxis=nvta_IndemnificationObligationsMember		na			
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration	
Business acquisition common stock issued (in shares) | shares	us-gaap_BusinessAcquisitionEquityInterestsIssuedOrIssuableNumberOfSharesIssued	us-gaap_	xbrli:sharesItemType	na	duration	0.4

+ References + Details

Cover - Business combinations - Genelex and YouScript (Details)

Business combinations - Genelex and YouScript (Details) - USD ($) $ in Thousands, shares in Millions	XBRL Details					1 Months Ended	3 Months Ended		9 Months Ended	
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Apr. 30, 2020	Sep. 30, 2021	Sep. 30, 2020	Sep. 30, 2021	Sep. 30, 2020
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Change in fair value of contingent consideration	us-gaap_BusinessCombinationContingentConsiderationArrangementsChangeInAmountOfContingentConsiderationLiability1	us-gaap_	xbrli:monetaryItemType	debit	duration		$ (19,866)	$ (504)	$ (386,836)	$ 4,328
Genelex	us-gaap_BusinessAcquisitionAxis=nvta_GenelexMember		na							
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Percentage of diluted interest acquired	us-gaap_BusinessAcquisitionPercentageOfVotingInterestsAcquired	us-gaap_	dtr-types:percentItemType	na	instant	100.00%				
Business combination, total purchase consideration	us-gaap_BusinessCombinationConsiderationTransferred1	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 13,200				
Business acquisition, expected milestone duration	nvta_BusinessCombinationContingentConsiderationArrangementsExpectedMilestoneDuration	nvta_	xbrli:durationItemType	na	duration	4 years				
Contingent consideration	us-gaap_BusinessCombinationContingentConsiderationLiability	us-gaap_	xbrli:monetaryItemType	credit	instant	$ 2,000	1,700		1,700	
YouScript	us-gaap_BusinessAcquisitionAxis=nvta_YouScriptMember		na							
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Percentage of diluted interest acquired	us-gaap_BusinessAcquisitionPercentageOfVotingInterestsAcquired	us-gaap_	dtr-types:percentItemType	na	instant	100.00%				
Business combination, total purchase consideration	us-gaap_BusinessCombinationConsiderationTransferred1	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 52,700				
Cash transferred	us-gaap_PaymentsToAcquireBusinessesGross	us-gaap_	xbrli:monetaryItemType	credit	duration	24,500				
Hold-back consideration - common stock	nvta_BusinessCombinationHoldbackConsiderationCommonStockValueAssigned	nvta_	xbrli:monetaryItemType	credit	duration				$ 6,500	
Change in fair value of contingent consideration	us-gaap_BusinessCombinationContingentConsiderationArrangementsChangeInAmountOfContingentConsiderationLiability1	us-gaap_	xbrli:monetaryItemType	debit	duration		$ 1,300			
Genelex and YouScript	us-gaap_BusinessAcquisitionAxis=nvta_GenelexandYouScriptMember		na							
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Hold-back consideration - common stock	nvta_BusinessCombinationHoldbackConsiderationCommonStockValueAssigned	nvta_	xbrli:monetaryItemType	credit	duration	$ 6,200				
Indemnification obligations | Genelex	us-gaap_ContingentConsiderationByTypeAxis=nvta_IndemnificationObligationsMember		na							
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Business acquisition common stock issued (in shares)	us-gaap_BusinessAcquisitionEquityInterestsIssuedOrIssuableNumberOfSharesIssued	us-gaap_	xbrli:sharesItemType	na	duration	0.1				
Indemnification obligations | YouScript	us-gaap_ContingentConsiderationByTypeAxis=nvta_IndemnificationObligationsMember		na							
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration					
Business acquisition common stock issued (in shares)	us-gaap_BusinessAcquisitionEquityInterestsIssuedOrIssuableNumberOfSharesIssued	us-gaap_	xbrli:sharesItemType	na	duration	0.5				
Hold-back consideration - common stock	nvta_BusinessCombinationHoldbackConsiderationCommonStockValueAssigned	nvta_	xbrli:monetaryItemType	credit	duration	$ 1,400				

+ References + Details

Cover - Business combinations - ArcherDX (Details)

Business combinations - ArcherDX (Details) - USD ($) shares in Millions	XBRL Details					1 Months Ended		3 Months Ended				9 Months Ended		
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Jul. 31, 2021	Nov. 30, 2020	Oct. 31, 2020	Sep. 30, 2021	Jun. 30, 2021	Mar. 31, 2021	Sep. 30, 2020	Sep. 30, 2021	Sep. 30, 2020	Dec. 31, 2020
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration										
Reduction in contingent consideration	us-gaap_BusinessCombinationContingentConsiderationArrangementsChangeInAmountOfContingentConsiderationLiability1	us-gaap_	xbrli:monetaryItemType	debit	duration				$ 19,866,000			$ 504,000	$ 386,836,000	$ (4,328,000)	
Reduction in goodwill	us-gaap_GoodwillPurchaseAccountingAdjustments	us-gaap_	xbrli:monetaryItemType	debit	duration								1,176,000		
Stock-based compensation expense (income)	us-gaap_AllocatedShareBasedCompensationExpense	us-gaap_	xbrli:monetaryItemType	debit	duration				$ 25,446,000			$ 21,205,000	131,782,000	$ 102,329,000	
ArcherDX	us-gaap_BusinessAcquisitionAxis=nvta_ArcherDXInc.Member		na												
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration										
Business acquisition common stock issued (in shares)	us-gaap_BusinessAcquisitionEquityInterestsIssuedOrIssuableNumberOfSharesIssued	us-gaap_	xbrli:sharesItemType	na	duration			30.0							
Cash transferred	us-gaap_PaymentsToAcquireBusinessesGross	us-gaap_	xbrli:monetaryItemType	credit	duration			$ 325,000,000							
Reduction in purchase price	us-gaap_BusinessCombinationProvisionalInformationInitialAccountingIncompleteAdjustmentConsiderationTransferred	us-gaap_	xbrli:monetaryItemType	credit	duration						$ 1,200,000				
Reduction in contingent consideration	us-gaap_BusinessCombinationContingentConsiderationArrangementsChangeInAmountOfContingentConsiderationLiability1	us-gaap_	xbrli:monetaryItemType	debit	duration						1,200,000				
Reduction in goodwill	us-gaap_GoodwillPurchaseAccountingAdjustments	us-gaap_	xbrli:monetaryItemType	debit	duration						1,200,000				
ArcherDX Milestone | ArcherDX	us-gaap_ContingentConsiderationByTypeAxis=nvta_ArcherDXMilestoneAchievementAgreementMember		na												
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration										
Business acquisition common stock issued (in shares)	us-gaap_BusinessAcquisitionEquityInterestsIssuedOrIssuableNumberOfSharesIssued	us-gaap_	xbrli:sharesItemType	na	duration		5.0	27.0	13.8						
Cash transferred	us-gaap_PaymentsToAcquireBusinessesGross	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 3,300,000	$ 1,900,000								
Stock-based compensation expense (income)	us-gaap_AllocatedShareBasedCompensationExpense	us-gaap_	xbrli:monetaryItemType	debit	duration								41,800,000		
ArcherDX Milestone | ArcherDX | Recurring basis	us-gaap_ContingentConsiderationByTypeAxis=nvta_ArcherDXMilestoneAchievementAgreementMember		na												
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration										
Contingent consideration	us-gaap_BusinessCombinationContingentConsiderationLiability	us-gaap_	xbrli:monetaryItemType	credit	instant			$ 945,200,000							
ArcherDX Milestone, one through four | ArcherDX	us-gaap_ContingentConsiderationByTypeAxis=nvta_ArcherDXMilestoneAgreementMilestoneOneThroughFourMember		na												
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration										
Reduction in contingent consideration	us-gaap_BusinessCombinationContingentConsiderationArrangementsChangeInAmountOfContingentConsiderationLiability1	us-gaap_	xbrli:monetaryItemType	debit	duration					$ 38,500,000					
Contingent consideration	us-gaap_BusinessCombinationContingentConsiderationLiability	us-gaap_	xbrli:monetaryItemType	credit	instant										$ 788,300,000
Share-based compensation expense, incremental cost	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardPlanModificationIncrementalCompensationCost	us-gaap_	xbrli:monetaryItemType	debit	duration								33,000,000		
ArcherDX Final Milestone | ArcherDX	us-gaap_ContingentConsiderationByTypeAxis=nvta_ArcherDXMilestoneAgreementMilestoneFiveMember		na												
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration										
Contingent consideration	us-gaap_BusinessCombinationContingentConsiderationLiability	us-gaap_	xbrli:monetaryItemType	credit	instant					$ 0	$ 262,500,000				$ 287,700,000
Stock-based compensation expense (income)	us-gaap_AllocatedShareBasedCompensationExpense	us-gaap_	xbrli:monetaryItemType	debit	duration								$ (29,700,000)		

+ References + Details

Cover - Business combinations - One Codex (Details)

Business combinations - One Codex (Details) - USD ($) $ in Thousands, shares in Millions	XBRL Details					1 Months Ended			
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Feb. 28, 2021	Oct. 31, 2020	Sep. 30, 2021	Dec. 31, 2020
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Goodwill	us-gaap_Goodwill	us-gaap_	xbrli:monetaryItemType	debit	instant			$ 2,283,059	$ 1,863,623
One Codex	us-gaap_BusinessAcquisitionAxis=nvta_OneCodexMember		na						
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Percentage of diluted interest acquired	us-gaap_BusinessAcquisitionPercentageOfVotingInterestsAcquired	us-gaap_	dtr-types:percentItemType	na	instant	100.00%			
Cash transferred	us-gaap_PaymentsToAcquireBusinessesGross	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 17,300			
Business acquisition common stock issued (in shares)	us-gaap_BusinessAcquisitionEquityInterestsIssuedOrIssuableNumberOfSharesIssued	us-gaap_	xbrli:sharesItemType	na	duration	1.4			
Estimated useful life	us-gaap_AcquiredFiniteLivedIntangibleAssetsWeightedAverageUsefulLife	us-gaap_	xbrli:durationItemType	na	duration	9 years			
Goodwill	us-gaap_Goodwill	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 63,442			
One Codex | Indemnification obligations	us-gaap_BusinessAcquisitionAxis=nvta_OneCodexMember		na						
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Business acquisition common stock issued (in shares)	us-gaap_BusinessAcquisitionEquityInterestsIssuedOrIssuableNumberOfSharesIssued	us-gaap_	xbrli:sharesItemType	na	duration	0.2			
ArcherDX	us-gaap_BusinessAcquisitionAxis=nvta_ArcherDXInc.Member		na						
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Cash transferred	us-gaap_PaymentsToAcquireBusinessesGross	us-gaap_	xbrli:monetaryItemType	credit	duration		$ 325,000		
Business acquisition common stock issued (in shares)	us-gaap_BusinessAcquisitionEquityInterestsIssuedOrIssuableNumberOfSharesIssued	us-gaap_	xbrli:sharesItemType	na	duration		30.0		

+ References + Details

Cover - Business combinations - Summary of the purchase price and post-combination expense (Details)

Business combinations - Summary of the purchase price and post-combination expense (Details) - USD ($) $ in Thousands	XBRL Details					1 Months Ended		
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Apr. 30, 2021	Feb. 28, 2021
One Codex	us-gaap_BusinessAcquisitionAxis=nvta_OneCodexMember		na					
Purchase Price	us-gaap_BusinessCombinationConsiderationTransferredAbstract	us-gaap_	xbrli:stringItemType	na	duration			
Cash transferred	us-gaap_PaymentsToAcquireBusinessesGross	us-gaap_	xbrli:monetaryItemType	credit	duration			$ 17,300
One Codex | Purchase Price	us-gaap_BusinessAcquisitionAxis=nvta_OneCodexMember		na					
Purchase Price	us-gaap_BusinessCombinationConsiderationTransferredAbstract	us-gaap_	xbrli:stringItemType	na	duration			
Cash transferred	us-gaap_PaymentsToAcquireBusinessesGross	us-gaap_	xbrli:monetaryItemType	credit	duration			16,504
Hold-back consideration - common stock	nvta_BusinessCombinationHoldbackConsiderationCommonStockValueAssigned	nvta_	xbrli:monetaryItemType	credit	duration			8,113
Common stock transferred	us-gaap_BusinessCombinationConsiderationTransferredEquityInterestsIssuedAndIssuable	us-gaap_	xbrli:monetaryItemType	credit	duration			58,774
Total	us-gaap_BusinessCombinationConsiderationTransferred1	us-gaap_	xbrli:monetaryItemType	credit	duration			83,391
One Codex | Post-combination Expense	us-gaap_BusinessAcquisitionAxis=nvta_OneCodexMember		na					
Post-combination Expense	us-gaap_BusinessCombinationSeparatelyRecognizedTransactionsAdditionalDisclosuresAbstract	us-gaap_	xbrli:stringItemType	na	duration			
Cash transferred	nvta_BusinessCombinationSeparatelyRecognizedTransactionsCashTransferred	nvta_	xbrli:monetaryItemType	debit	duration			783
Hold-back consideration - common stock	nvta_BusinessCombinationSeparatelyRecognizedTransactionsContingentConsideration	nvta_	xbrli:monetaryItemType	debit	duration			359
Common stock transferred	nvta_BusinessCombinationSeparatelyRecognizedTransactionsCommonStockTransferred	nvta_	xbrli:monetaryItemType	debit	duration			2,600
Total	us-gaap_BusinessCombinationSeparatelyRecognizedTransactionsExpensesAndLossesRecognized	us-gaap_	xbrli:monetaryItemType	debit	duration			$ 3,742
Genosity	us-gaap_BusinessAcquisitionAxis=nvta_GenosityIncMember		na					
Purchase Price	us-gaap_BusinessCombinationConsiderationTransferredAbstract	us-gaap_	xbrli:stringItemType	na	duration			
Cash transferred	us-gaap_PaymentsToAcquireBusinessesGross	us-gaap_	xbrli:monetaryItemType	credit	duration		$ 119,959	
Hold back and other consideration	us-gaap_BusinessCombinationConsiderationTransferredOther1	us-gaap_	xbrli:monetaryItemType	credit	duration		8,774	
Common stock transferred	us-gaap_BusinessCombinationConsiderationTransferredEquityInterestsIssuedAndIssuable	us-gaap_	xbrli:monetaryItemType	credit	duration		67,308	
Total	us-gaap_BusinessCombinationConsiderationTransferred1	us-gaap_	xbrli:monetaryItemType	credit	duration		$ 196,041	
Ciitizen	us-gaap_BusinessAcquisitionAxis=nvta_CiitizenCorporationMember		na					
Purchase Price	us-gaap_BusinessCombinationConsiderationTransferredAbstract	us-gaap_	xbrli:stringItemType	na	duration			
Cash transferred	us-gaap_PaymentsToAcquireBusinessesGross	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 87,361		
Hold back and other consideration	us-gaap_BusinessCombinationConsiderationTransferredOther1	us-gaap_	xbrli:monetaryItemType	credit	duration	34,161		
Common stock transferred	us-gaap_BusinessCombinationConsiderationTransferredEquityInterestsIssuedAndIssuable	us-gaap_	xbrli:monetaryItemType	credit	duration	186,778		
Total	us-gaap_BusinessCombinationConsiderationTransferred1	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 308,300		

+ References + Details

Cover - Business combinations - Summary of fair values of assets acquired and liabilities assumed (Details)

Business combinations - Summary of fair values of assets acquired and liabilities assumed (Details) - USD ($) $ in Thousands	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Apr. 30, 2021	Feb. 28, 2021	Dec. 31, 2020
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Goodwill	us-gaap_Goodwill	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 2,283,059			$ 1,863,623
One Codex	us-gaap_BusinessAcquisitionAxis=nvta_OneCodexMember		na						
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Cash	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedCashAndEquivalents	us-gaap_	xbrli:monetaryItemType	debit	instant			$ 1,549	
Accounts receivable	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedCurrentAssetsReceivables	us-gaap_	xbrli:monetaryItemType	debit	instant			684	
Total identifiable assets acquired	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedAssets	us-gaap_	xbrli:monetaryItemType	debit	instant			26,514	
Other liabilities	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedCurrentLiabilitiesOther	us-gaap_	xbrli:monetaryItemType	credit	instant			(415)	
Deferred tax liability	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedDeferredTaxLiabilities	us-gaap_	xbrli:monetaryItemType	credit	instant			(6,150)	
Net identifiable assets acquired	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedNet	us-gaap_	xbrli:monetaryItemType	debit	instant			19,949	
Goodwill	us-gaap_Goodwill	us-gaap_	xbrli:monetaryItemType	debit	instant			63,442	
Total purchase price	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredGoodwillAndLiabilitiesAssumedNet	us-gaap_	xbrli:monetaryItemType	debit	instant			83,391	
One Codex | Developed technology	us-gaap_BusinessAcquisitionAxis=nvta_OneCodexMember		na						
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Intangible assets	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedIntangibleAssetsOtherThanGoodwill	us-gaap_	xbrli:monetaryItemType	debit	instant			23,841	
One Codex | Customer relationships	us-gaap_BusinessAcquisitionAxis=nvta_OneCodexMember		na						
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Intangible assets	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedIntangibleAssetsOtherThanGoodwill	us-gaap_	xbrli:monetaryItemType	debit	instant			$ 440	
Genosity	us-gaap_BusinessAcquisitionAxis=nvta_GenosityIncMember		na						
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Cash	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedCashAndEquivalents	us-gaap_	xbrli:monetaryItemType	debit	instant		$ 906		
Accounts receivable	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedCurrentAssetsReceivables	us-gaap_	xbrli:monetaryItemType	debit	instant		355		
Other assets	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedOtherNoncurrentAssets	us-gaap_	xbrli:monetaryItemType	debit	instant		3,732		
Total identifiable assets acquired	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedAssets	us-gaap_	xbrli:monetaryItemType	debit	instant		81,493		
Other liabilities	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedCurrentLiabilitiesOther	us-gaap_	xbrli:monetaryItemType	credit	instant		(2,852)		
Deferred tax liability	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedDeferredTaxLiabilities	us-gaap_	xbrli:monetaryItemType	credit	instant		(17,600)		
Net identifiable assets acquired	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedNet	us-gaap_	xbrli:monetaryItemType	debit	instant		61,041		
Goodwill	us-gaap_Goodwill	us-gaap_	xbrli:monetaryItemType	debit	instant		135,000		
Total purchase price	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredGoodwillAndLiabilitiesAssumedNet	us-gaap_	xbrli:monetaryItemType	debit	instant		196,041		
Genosity | Developed technology	us-gaap_BusinessAcquisitionAxis=nvta_GenosityIncMember		na						
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Intangible assets	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedIntangibleAssetsOtherThanGoodwill	us-gaap_	xbrli:monetaryItemType	debit	instant		$ 76,500		
Ciitizen	us-gaap_BusinessAcquisitionAxis=nvta_CiitizenCorporationMember		na						
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Cash	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedCashAndEquivalents	us-gaap_	xbrli:monetaryItemType	debit	instant	274			
Accounts receivable	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedCurrentAssetsReceivables	us-gaap_	xbrli:monetaryItemType	debit	instant	748			
Other receivables	nvta_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedCurrentAssetsOtherReceivables	nvta_	xbrli:monetaryItemType	debit	instant	688			
Other assets	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedOtherNoncurrentAssets	us-gaap_	xbrli:monetaryItemType	debit	instant	970			
Total identifiable assets acquired	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedAssets	us-gaap_	xbrli:monetaryItemType	debit	instant	95,580			
Other liabilities	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedCurrentLiabilitiesOther	us-gaap_	xbrli:monetaryItemType	credit	instant	(2,550)			
Deferred tax liability	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedDeferredTaxLiabilities	us-gaap_	xbrli:monetaryItemType	credit	instant	(6,900)			
Net identifiable assets acquired	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedNet	us-gaap_	xbrli:monetaryItemType	debit	instant	86,130			
Goodwill	us-gaap_Goodwill	us-gaap_	xbrli:monetaryItemType	debit	instant	222,170			
Total purchase price	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredGoodwillAndLiabilitiesAssumedNet	us-gaap_	xbrli:monetaryItemType	debit	instant	308,300			
Ciitizen | Developed technology	us-gaap_BusinessAcquisitionAxis=nvta_CiitizenCorporationMember		na						
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Intangible assets	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedIntangibleAssetsOtherThanGoodwill	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 92,900			

+ References + Details

Cover - Business combinations - Genosity (Details)

Business combinations - Genosity (Details) - USD ($) $ in Thousands	XBRL Details					1 Months Ended	3 Months Ended		9 Months Ended			
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Apr. 30, 2021	Sep. 30, 2021	Sep. 30, 2020	Sep. 30, 2021	Sep. 30, 2020	Jun. 30, 2021	Dec. 31, 2020
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration							
Total stock-based compensation expense	us-gaap_AllocatedShareBasedCompensationExpense	us-gaap_	xbrli:monetaryItemType	debit	duration		$ 25,446	$ 21,205	$ 131,782	$ 102,329		
Reduction in contingent consideration	us-gaap_BusinessCombinationContingentConsiderationArrangementsChangeInAmountOfContingentConsiderationLiability1	us-gaap_	xbrli:monetaryItemType	debit	duration		19,866	$ 504	386,836	$ (4,328)		
Goodwill	us-gaap_Goodwill	us-gaap_	xbrli:monetaryItemType	debit	instant		2,283,059		2,283,059			$ 1,863,623
Genosity	us-gaap_BusinessAcquisitionAxis=nvta_GenosityIncMember		na									
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration							
Percentage of diluted interest acquired	us-gaap_BusinessAcquisitionPercentageOfVotingInterestsAcquired	us-gaap_	dtr-types:percentItemType	na	instant	100.00%						
Business combination, total purchase consideration	us-gaap_BusinessCombinationConsiderationTransferred1	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 196,041						
Cash transferred	us-gaap_PaymentsToAcquireBusinessesGross	us-gaap_	xbrli:monetaryItemType	credit	duration	119,959						
Total stock-based compensation expense	us-gaap_AllocatedShareBasedCompensationExpense	us-gaap_	xbrli:monetaryItemType	debit	duration		$ 300		500			
Contingent consideration	us-gaap_BusinessCombinationContingentConsiderationLiability	us-gaap_	xbrli:monetaryItemType	credit	instant	$ 7,000					$ 3,200	
Reduction in contingent consideration	us-gaap_BusinessCombinationContingentConsiderationArrangementsChangeInAmountOfContingentConsiderationLiability1	us-gaap_	xbrli:monetaryItemType	debit	duration				$ 3,800			
Estimated useful life	us-gaap_AcquiredFiniteLivedIntangibleAssetsWeightedAverageUsefulLife	us-gaap_	xbrli:durationItemType	na	duration	12 years						
Goodwill	us-gaap_Goodwill	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 135,000						
Genosity | RSU	us-gaap_BusinessAcquisitionAxis=nvta_GenosityIncMember		na									
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration							
Business acquisition, value of units granted	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardEquityInstrumentsOtherThanOptionsAggregateIntrinsicValueOutstanding	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 5,000						

+ References + Details

Cover - Business combinations - Ciitizen (Details)

Business combinations - Ciitizen (Details) - USD ($) $ in Thousands, shares in Millions	XBRL Details					1 Months Ended	3 Months Ended		9 Months Ended		
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Sep. 30, 2021	Sep. 30, 2020	Sep. 30, 2021	Sep. 30, 2020	Dec. 31, 2020
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration						
Change in fair value of contingent consideration	us-gaap_BusinessCombinationContingentConsiderationArrangementsChangeInAmountOfContingentConsiderationLiability1	us-gaap_	xbrli:monetaryItemType	debit	duration		$ (19,866)	$ (504)	$ (386,836)	$ 4,328	
Total stock-based compensation expense	us-gaap_AllocatedShareBasedCompensationExpense	us-gaap_	xbrli:monetaryItemType	debit	duration		25,446	$ 21,205	131,782	$ 102,329	
Goodwill	us-gaap_Goodwill	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 2,283,059	$ 2,283,059		$ 2,283,059		$ 1,863,623
Ciitizen	us-gaap_BusinessAcquisitionAxis=nvta_CiitizenCorporationMember		na								
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration						
Percentage of diluted interest acquired	us-gaap_BusinessAcquisitionPercentageOfVotingInterestsAcquired	us-gaap_	dtr-types:percentItemType	na	instant	100.00%	100.00%		100.00%		
Business combination, total purchase consideration	us-gaap_BusinessCombinationConsiderationTransferred1	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 308,300					
Cash transferred	us-gaap_PaymentsToAcquireBusinessesGross	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 87,361					
Business acquisition common stock issued (in shares)	us-gaap_BusinessAcquisitionEquityInterestsIssuedOrIssuableNumberOfSharesIssued	us-gaap_	xbrli:sharesItemType	na	duration	6.3					
Contingent consideration	us-gaap_BusinessCombinationContingentConsiderationLiability	us-gaap_	xbrli:monetaryItemType	credit	instant	$ 22,700	$ 22,700		$ 22,700		
Change in fair value of contingent consideration	us-gaap_BusinessCombinationContingentConsiderationArrangementsChangeInAmountOfContingentConsiderationLiability1	us-gaap_	xbrli:monetaryItemType	debit	duration		1,100				
Total stock-based compensation expense	us-gaap_AllocatedShareBasedCompensationExpense	us-gaap_	xbrli:monetaryItemType	debit	duration		1,600		1,600		
Estimated useful life	us-gaap_AcquiredFiniteLivedIntangibleAssetsWeightedAverageUsefulLife	us-gaap_	xbrli:durationItemType	na	duration	12 years					
Goodwill	us-gaap_Goodwill	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 222,170	222,170		222,170		
Ciitizen | Indemnification obligations	us-gaap_BusinessAcquisitionAxis=nvta_CiitizenCorporationMember		na								
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration						
Cash transferred	us-gaap_PaymentsToAcquireBusinessesGross	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 10,400					
Business acquisition common stock issued (in shares)	us-gaap_BusinessAcquisitionEquityInterestsIssuedOrIssuableNumberOfSharesIssued	us-gaap_	xbrli:sharesItemType	na	duration	0.8					
Ciitizen | RSU	us-gaap_BusinessAcquisitionAxis=nvta_CiitizenCorporationMember		na								
Business Acquisition [Line Items]	us-gaap_BusinessAcquisitionLineItems	us-gaap_	xbrli:stringItemType	na	duration						
Business acquisition, value of units granted	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardEquityInstrumentsOtherThanOptionsAggregateIntrinsicValueOutstanding	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 246,900	$ 246,900		$ 246,900		

+ References + Details

Cover - Goodwill and intangible assets - Summary of goodwill (Details)

Goodwill and intangible assets - Summary of goodwill (Details) $ in Thousands	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021 USD ($)
Goodwill [Roll Forward]	us-gaap_GoodwillRollForward	us-gaap_	xbrli:stringItemType	na	duration	
Beginning Balance	us-gaap_Goodwill	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 1,863,623
Goodwill adjustment	us-gaap_GoodwillPurchaseAccountingAdjustments	us-gaap_	xbrli:monetaryItemType	debit	duration	(1,176)
Goodwill acquired	us-gaap_GoodwillAcquiredDuringPeriod	us-gaap_	xbrli:monetaryItemType	debit	duration	420,612
Ending Balance	us-gaap_Goodwill	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 2,283,059

+ References + Details

Cover - Goodwill and intangible assets - Schedule of intangible assets (Details)

Goodwill and intangible assets - Schedule of intangible assets (Details) - USD ($) $ in Thousands	XBRL Details					9 Months Ended	12 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Dec. 31, 2020
Finite-Lived Intangible Assets [Line Items]	us-gaap_FiniteLivedIntangibleAssetsLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Accumulated Amortization	us-gaap_FiniteLivedIntangibleAssetsAccumulatedAmortization	us-gaap_	xbrli:monetaryItemType	credit	instant	$ (81,634)	$ (40,407)
Total estimated future amortization expense	us-gaap_FiniteLivedIntangibleAssetsNet	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 625,769	
Weighted-AverageUseful Life	us-gaap_FiniteLivedIntangibleAssetUsefulLife	us-gaap_	xbrli:durationItemType	na	duration	10 years 6 months	10 years 10 months 24 days
Cost	us-gaap_IntangibleAssetsGrossExcludingGoodwill	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 1,249,791	$ 1,022,252
Net	us-gaap_IntangibleAssetsNetExcludingGoodwill	us-gaap_	xbrli:monetaryItemType	debit	instant	1,168,157	981,845
Customer relationships	us-gaap_FiniteLivedIntangibleAssetsByMajorClassAxis=us-gaap_CustomerRelationshipsMember		na				
Finite-Lived Intangible Assets [Line Items]	us-gaap_FiniteLivedIntangibleAssetsLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Cost, finite intangible	us-gaap_FiniteLivedIntangibleAssetsGross	us-gaap_	xbrli:monetaryItemType	debit	instant	41,515	41,075
Accumulated Amortization	us-gaap_FiniteLivedIntangibleAssetsAccumulatedAmortization	us-gaap_	xbrli:monetaryItemType	credit	instant	(11,896)	(8,292)
Total estimated future amortization expense	us-gaap_FiniteLivedIntangibleAssetsNet	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 29,619	$ 32,783
Weighted-AverageUseful Life	us-gaap_FiniteLivedIntangibleAssetUsefulLife	us-gaap_	xbrli:durationItemType	na	duration	10 years 9 months 18 days	10 years 9 months 18 days
Developed technology	us-gaap_FiniteLivedIntangibleAssetsByMajorClassAxis=us-gaap_TechnologyBasedIntangibleAssetsMember		na				
Finite-Lived Intangible Assets [Line Items]	us-gaap_FiniteLivedIntangibleAssetsLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Cost, finite intangible	us-gaap_FiniteLivedIntangibleAssetsGross	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 624,663	$ 397,563
Accumulated Amortization	us-gaap_FiniteLivedIntangibleAssetsAccumulatedAmortization	us-gaap_	xbrli:monetaryItemType	credit	instant	(66,280)	(31,013)
Total estimated future amortization expense	us-gaap_FiniteLivedIntangibleAssetsNet	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 558,383	$ 366,550
Weighted-AverageUseful Life	us-gaap_FiniteLivedIntangibleAssetUsefulLife	us-gaap_	xbrli:durationItemType	na	duration	10 years 3 months 18 days	10 years 7 months 6 days
Non-compete agreement	us-gaap_FiniteLivedIntangibleAssetsByMajorClassAxis=us-gaap_NoncompeteAgreementsMember		na				
Finite-Lived Intangible Assets [Line Items]	us-gaap_FiniteLivedIntangibleAssetsLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Cost, finite intangible	us-gaap_FiniteLivedIntangibleAssetsGross	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 286	$ 286
Accumulated Amortization	us-gaap_FiniteLivedIntangibleAssetsAccumulatedAmortization	us-gaap_	xbrli:monetaryItemType	credit	instant	(272)	(229)
Total estimated future amortization expense	us-gaap_FiniteLivedIntangibleAssetsNet	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 14	$ 57
Weighted-AverageUseful Life	us-gaap_FiniteLivedIntangibleAssetUsefulLife	us-gaap_	xbrli:durationItemType	na	duration	5 years	5 years
Tradename	us-gaap_FiniteLivedIntangibleAssetsByMajorClassAxis=us-gaap_TradeNamesMember		na				
Finite-Lived Intangible Assets [Line Items]	us-gaap_FiniteLivedIntangibleAssetsLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Cost, finite intangible	us-gaap_FiniteLivedIntangibleAssetsGross	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 21,085	$ 21,085
Accumulated Amortization	us-gaap_FiniteLivedIntangibleAssetsAccumulatedAmortization	us-gaap_	xbrli:monetaryItemType	credit	instant	(1,767)	(447)
Total estimated future amortization expense	us-gaap_FiniteLivedIntangibleAssetsNet	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 19,318	$ 20,638
Weighted-AverageUseful Life	us-gaap_FiniteLivedIntangibleAssetUsefulLife	us-gaap_	xbrli:durationItemType	na	duration	12 years	12 years
Patent assets and licenses	us-gaap_FiniteLivedIntangibleAssetsByMajorClassAxis=nvta_PatentLicensingAgreementMember		na				
Finite-Lived Intangible Assets [Line Items]	us-gaap_FiniteLivedIntangibleAssetsLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Cost, finite intangible	us-gaap_FiniteLivedIntangibleAssetsGross	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 495	$ 496
Accumulated Amortization	us-gaap_FiniteLivedIntangibleAssetsAccumulatedAmortization	us-gaap_	xbrli:monetaryItemType	credit	instant	(128)	(103)
Total estimated future amortization expense	us-gaap_FiniteLivedIntangibleAssetsNet	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 367	$ 393
Weighted-AverageUseful Life	us-gaap_FiniteLivedIntangibleAssetUsefulLife	us-gaap_	xbrli:durationItemType	na	duration	15 years	15 years
Right to develop new technology	us-gaap_FiniteLivedIntangibleAssetsByMajorClassAxis=us-gaap_DevelopedTechnologyRightsMember		na				
Finite-Lived Intangible Assets [Line Items]	us-gaap_FiniteLivedIntangibleAssetsLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Cost, finite intangible	us-gaap_FiniteLivedIntangibleAssetsGross	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 19,359	$ 19,359
Accumulated Amortization	us-gaap_FiniteLivedIntangibleAssetsAccumulatedAmortization	us-gaap_	xbrli:monetaryItemType	credit	instant	(1,291)	(323)
Total estimated future amortization expense	us-gaap_FiniteLivedIntangibleAssetsNet	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 18,068	$ 19,036
Weighted-AverageUseful Life	us-gaap_FiniteLivedIntangibleAssetUsefulLife	us-gaap_	xbrli:durationItemType	na	duration	15 years	15 years
In-process research and development	us-gaap_FiniteLivedIntangibleAssetsByMajorClassAxis=us-gaap_InProcessResearchAndDevelopmentMember		na				
Finite-Lived Intangible Assets [Line Items]	us-gaap_FiniteLivedIntangibleAssetsLineItems	us-gaap_	xbrli:stringItemType	na	duration		
In-process research and development	us-gaap_IndefiniteLivedIntangibleAssetsExcludingGoodwill	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 542,388	$ 542,388

+ References + Details

Cover - Goodwill and intangible assets - Additional information (Details)

Goodwill and intangible assets - Additional information (Details) - USD ($) $ in Millions	XBRL Details					3 Months Ended		9 Months Ended	
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Sep. 30, 2020	Sep. 30, 2021	Sep. 30, 2020
Goodwill and Intangible Assets Disclosure [Abstract]	us-gaap_GoodwillAndIntangibleAssetsDisclosureAbstract	us-gaap_	xbrli:stringItemType	na	duration				
Amortization expense	us-gaap_AmortizationOfIntangibleAssets	us-gaap_	xbrli:monetaryItemType	debit	duration	$ 15.6	$ 5.6	$ 41.2	$ 14.8

+ References + Details

Cover - Goodwill and intangible assets - Summary of estimated future amortization expense of intangible assets with finite lives (Details)

Goodwill and intangible assets - Summary of estimated future amortization expense of intangible assets with finite lives (Details) $ in Thousands	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021 USD ($)
Goodwill and Intangible Assets Disclosure [Abstract]	us-gaap_GoodwillAndIntangibleAssetsDisclosureAbstract	us-gaap_	xbrli:stringItemType	na	duration	
2021 (remainder of year)	us-gaap_FiniteLivedIntangibleAssetsAmortizationExpenseRemainderOfFiscalYear	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 17,607
2022	us-gaap_FiniteLivedIntangibleAssetsAmortizationExpenseNextTwelveMonths	us-gaap_	xbrli:monetaryItemType	debit	instant	69,025
2023	us-gaap_FiniteLivedIntangibleAssetsAmortizationExpenseYearTwo	us-gaap_	xbrli:monetaryItemType	debit	instant	68,012
2024	us-gaap_FiniteLivedIntangibleAssetsAmortizationExpenseYearThree	us-gaap_	xbrli:monetaryItemType	debit	instant	67,734
2025	us-gaap_FiniteLivedIntangibleAssetsAmortizationExpenseYearFour	us-gaap_	xbrli:monetaryItemType	debit	instant	65,980
Thereafter	nvta_FiniteLivedIntangibleAssetExpectedAmortizationafterYearFour	nvta_	xbrli:monetaryItemType	debit	instant	337,411
Total estimated future amortization expense	us-gaap_FiniteLivedIntangibleAssetsNet	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 625,769

+ References + Details

Cover - Goodwill and intangible assets - Medneon Narrative (Details)

Goodwill and intangible assets - Medneon Narrative (Details) - Medneon $ in Millions	XBRL Details					1 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Jul. 31, 2021 USD ($)
Finite-Lived Intangible Assets [Line Items]	us-gaap_FiniteLivedIntangibleAssetsLineItems	us-gaap_	xbrli:stringItemType	na	duration	
Percentage of diluted interest acquired	us-gaap_BusinessAcquisitionPercentageOfVotingInterestsAcquired	us-gaap_	dtr-types:percentItemType	na	instant	100.00%
Business combination, total purchase consideration	us-gaap_BusinessCombinationConsiderationTransferred1	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 34.1
Common stock transferred	us-gaap_BusinessCombinationConsiderationTransferredEquityInterestsIssuedAndIssuable	us-gaap_	xbrli:monetaryItemType	credit	duration	10.3
Business combination, liabilities incurred	us-gaap_BusinessCombinationConsiderationTransferredLiabilitiesIncurred	us-gaap_	xbrli:monetaryItemType	credit	duration	4.9
Cash	us-gaap_BusinessCombinationRecognizedIdentifiableAssetsAcquiredAndLiabilitiesAssumedCashAndEquivalents	us-gaap_	xbrli:monetaryItemType	debit	instant	0.2
Developed technology	us-gaap_BusinessAcquisitionAxis=nvta_MedneonLLCMember		na			
Finite-Lived Intangible Assets [Line Items]	us-gaap_FiniteLivedIntangibleAssetsLineItems	us-gaap_	xbrli:stringItemType	na	duration	
Intangible assets acquired	us-gaap_FinitelivedIntangibleAssetsAcquired1	us-gaap_	xbrli:monetaryItemType	debit	duration	$ 33.9
Estimated useful life	us-gaap_AcquiredFiniteLivedIntangibleAssetsWeightedAverageUsefulLife	us-gaap_	xbrli:durationItemType	na	duration	8 years

+ References + Details

Cover - Balance sheet components - Schedule of inventory (Details)

Balance sheet components - Schedule of inventory (Details) - USD ($) $ in Thousands	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Dec. 31, 2020
Offsetting [Abstract]	us-gaap_OffsettingAbstract	us-gaap_	xbrli:stringItemType	na	duration		
Raw materials	us-gaap_InventoryRawMaterialsNetOfReserves	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 26,318	$ 21,324
Work in progress	us-gaap_InventoryWorkInProcessNetOfReserves	us-gaap_	xbrli:monetaryItemType	debit	instant	3,215	8,847
Finished goods	us-gaap_InventoryFinishedGoodsNetOfReserves	us-gaap_	xbrli:monetaryItemType	debit	instant	1,100	1,859
Total inventory	us-gaap_InventoryNet	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 30,633	$ 32,030

+ References + Details

Cover - Balance sheet components - Schedule of property and equipment (Details)

Balance sheet components - Schedule of property and equipment (Details) - USD ($) $ in Thousands	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Dec. 31, 2020
Property and equipment	us-gaap_PropertyPlantAndEquipmentLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Total property and equipment, gross	us-gaap_PropertyPlantAndEquipmentGross	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 145,525	$ 97,449
Accumulated depreciation and amortization	us-gaap_AccumulatedDepreciationDepletionAndAmortizationPropertyPlantAndEquipment	us-gaap_	xbrli:monetaryItemType	credit	instant	(44,525)	(31,347)
Total property and equipment, net	us-gaap_PropertyPlantAndEquipmentNet	us-gaap_	xbrli:monetaryItemType	debit	instant	101,000	66,102
Leasehold improvements	us-gaap_PropertyPlantAndEquipmentByTypeAxis=us-gaap_LeaseholdImprovementsMember		na				
Property and equipment	us-gaap_PropertyPlantAndEquipmentLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Total property and equipment, gross	us-gaap_PropertyPlantAndEquipmentGross	us-gaap_	xbrli:monetaryItemType	debit	instant	31,059	26,516
Laboratory equipment	us-gaap_PropertyPlantAndEquipmentByTypeAxis=us-gaap_EquipmentMember		na				
Property and equipment	us-gaap_PropertyPlantAndEquipmentLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Total property and equipment, gross	us-gaap_PropertyPlantAndEquipmentGross	us-gaap_	xbrli:monetaryItemType	debit	instant	61,994	45,342
Computer equipment	us-gaap_PropertyPlantAndEquipmentByTypeAxis=us-gaap_ComputerEquipmentMember		na				
Property and equipment	us-gaap_PropertyPlantAndEquipmentLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Total property and equipment, gross	us-gaap_PropertyPlantAndEquipmentGross	us-gaap_	xbrli:monetaryItemType	debit	instant	15,829	10,939
Software	us-gaap_PropertyPlantAndEquipmentByTypeAxis=us-gaap_SoftwareAndSoftwareDevelopmentCostsMember		na				
Property and equipment	us-gaap_PropertyPlantAndEquipmentLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Total property and equipment, gross	us-gaap_PropertyPlantAndEquipmentGross	us-gaap_	xbrli:monetaryItemType	debit	instant	867	566
Furniture and fixtures	us-gaap_PropertyPlantAndEquipmentByTypeAxis=us-gaap_FurnitureAndFixturesMember		na				
Property and equipment	us-gaap_PropertyPlantAndEquipmentLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Total property and equipment, gross	us-gaap_PropertyPlantAndEquipmentGross	us-gaap_	xbrli:monetaryItemType	debit	instant	2,046	1,967
Automobiles	us-gaap_PropertyPlantAndEquipmentByTypeAxis=us-gaap_AutomobilesMember		na				
Property and equipment	us-gaap_PropertyPlantAndEquipmentLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Total property and equipment, gross	us-gaap_PropertyPlantAndEquipmentGross	us-gaap_	xbrli:monetaryItemType	debit	instant	58	58
Construction-in-progress	us-gaap_PropertyPlantAndEquipmentByTypeAxis=us-gaap_ConstructionInProgressMember		na				
Property and equipment	us-gaap_PropertyPlantAndEquipmentLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Total property and equipment, gross	us-gaap_PropertyPlantAndEquipmentGross	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 33,672	$ 12,061

+ References + Details

Cover - Balance sheet components - Additional information (Details)

Balance sheet components - Additional information (Details) - USD ($) $ in Millions	XBRL Details					3 Months Ended		9 Months Ended	
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Sep. 30, 2020	Sep. 30, 2021	Sep. 30, 2020
Balance Sheet Related Disclosures [Abstract]	us-gaap_BalanceSheetRelatedDisclosuresAbstract	us-gaap_	xbrli:stringItemType	na	duration				
Depreciation	us-gaap_Depreciation	us-gaap_	xbrli:monetaryItemType	debit	duration	$ 5.1	$ 2.4	$ 13.2	$ 6.8

+ Details

Cover - Balance sheet components - Schedule of accrued liabilities (Details)

Balance sheet components - Schedule of accrued liabilities (Details) - USD ($) $ in Thousands	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Dec. 31, 2020
Balance Sheet Related Disclosures [Abstract]	us-gaap_BalanceSheetRelatedDisclosuresAbstract	us-gaap_	xbrli:stringItemType	na	duration		
Accrued compensation and related expenses	us-gaap_EmployeeRelatedLiabilitiesCurrent	us-gaap_	xbrli:monetaryItemType	credit	instant	$ 40,037	$ 25,221
Accrued interest	us-gaap_InterestPayableCurrent	us-gaap_	xbrli:monetaryItemType	credit	instant	583	2,333
Compensation and other liabilities associated with business combinations	nvta_BusinessCombinationAccruedLiabilitiesCurrent	nvta_	xbrli:monetaryItemType	credit	instant	15,377	25,600
Deferred revenue	us-gaap_ContractWithCustomerLiabilityCurrent	us-gaap_	xbrli:monetaryItemType	credit	instant	8,261	6,378
Other	us-gaap_OtherAccruedLiabilitiesCurrent	us-gaap_	xbrli:monetaryItemType	credit	instant	40,050	26,526
Total accrued liabilities	us-gaap_AccruedLiabilitiesCurrent	us-gaap_	xbrli:monetaryItemType	credit	instant	$ 104,308	$ 86,058

+ References + Details

Cover - Balance sheet components - Other long-term liabilities (Details)

Balance sheet components - Other long-term liabilities (Details) - USD ($) $ in Thousands	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Dec. 31, 2020
Balance Sheet Related Disclosures [Abstract]	us-gaap_BalanceSheetRelatedDisclosuresAbstract	us-gaap_	xbrli:stringItemType	na	duration		
Deferred revenue, non-current	us-gaap_ContractWithCustomerLiabilityNoncurrent	us-gaap_	xbrli:monetaryItemType	credit	instant	$ 678	$ 1,380
Compensation and other liabilities associated with business combinations, non-current	nvta_BusinessCombinationAccruedLiabilitiesNoncurrent	nvta_	xbrli:monetaryItemType	credit	instant	39,625	825,976
Other	us-gaap_OtherAccruedLiabilitiesNoncurrent	us-gaap_	xbrli:monetaryItemType	credit	instant	15,879	13,900
Total other long-term liabilities	us-gaap_OtherLiabilitiesNoncurrent	us-gaap_	xbrli:monetaryItemType	credit	instant	$ 56,182	$ 841,256

+ References + Details

Cover - Fair value measurements - Financial instruments at fair value on a recurring basis (Details)

Fair value measurements - Financial instruments at fair value on a recurring basis (Details) - USD ($) $ in Thousands	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Dec. 31, 2020
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Amortized Cost	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesAmortizedCost	nvta_	xbrli:monetaryItemType	debit	instant	$ 1,185,138	$ 312,294
Unrealized Gains	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesAmortizedCostGrossUnrealizedGainBeforeTax	nvta_	xbrli:monetaryItemType	credit	instant	21	16
Unrealized Losses	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesAmortizedCostGrossUnrealizedLossBeforeTax	nvta_	xbrli:monetaryItemType	debit	instant	0	(15)
Financial assets:	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesFairValue	nvta_	xbrli:monetaryItemType	debit	instant	1,185,159	312,295
Total financial liabilities	us-gaap_LiabilitiesFairValueDisclosure	us-gaap_	xbrli:monetaryItemType	credit	instant	35,772	835,876
Cash equivalents	us-gaap_CashEquivalentsAtCarryingValue	us-gaap_	xbrli:monetaryItemType	debit	instant	854,419	76,423
Restricted cash	us-gaap_RestrictedCashAndCashEquivalents	us-gaap_	xbrli:monetaryItemType	debit	instant	10,275	6,686
Marketable securities	us-gaap_AvailableForSaleSecuritiesDebtSecurities	us-gaap_	xbrli:monetaryItemType	debit	instant	320,465	229,186
Recurring basis	us-gaap_FairValueByMeasurementFrequencyAxis=us-gaap_FairValueMeasurementsRecurringMember		na				
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Total financial assets	us-gaap_AssetsFairValueDisclosure	us-gaap_	xbrli:monetaryItemType	debit	instant	1,185,159	312,295
Total financial liabilities	us-gaap_LiabilitiesFairValueDisclosure	us-gaap_	xbrli:monetaryItemType	credit	instant	35,772	835,876
Recurring basis | Level 1	us-gaap_FairValueByMeasurementFrequencyAxis=us-gaap_FairValueMeasurementsRecurringMember		na				
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Total financial assets	us-gaap_AssetsFairValueDisclosure	us-gaap_	xbrli:monetaryItemType	debit	instant	1,139,111	247,995
Total financial liabilities	us-gaap_LiabilitiesFairValueDisclosure	us-gaap_	xbrli:monetaryItemType	credit	instant	0	0
Recurring basis | Level 2	us-gaap_FairValueByMeasurementFrequencyAxis=us-gaap_FairValueMeasurementsRecurringMember		na				
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Total financial assets	us-gaap_AssetsFairValueDisclosure	us-gaap_	xbrli:monetaryItemType	debit	instant	46,048	64,300
Total financial liabilities	us-gaap_LiabilitiesFairValueDisclosure	us-gaap_	xbrli:monetaryItemType	credit	instant	0	0
Recurring basis | Level 3	us-gaap_FairValueByMeasurementFrequencyAxis=us-gaap_FairValueMeasurementsRecurringMember		na				
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Total financial assets	us-gaap_AssetsFairValueDisclosure	us-gaap_	xbrli:monetaryItemType	debit	instant	0	0
Total financial liabilities	us-gaap_LiabilitiesFairValueDisclosure	us-gaap_	xbrli:monetaryItemType	credit	instant	35,772	835,876
Money market funds	us-gaap_FinancialInstrumentAxis=us-gaap_MoneyMarketFundsMember		na				
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Amortized Cost	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesAmortizedCost	nvta_	xbrli:monetaryItemType	debit	instant	864,694	83,109
Unrealized Gains	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesAmortizedCostGrossUnrealizedGainBeforeTax	nvta_	xbrli:monetaryItemType	credit	instant	0	0
Unrealized Losses	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesAmortizedCostGrossUnrealizedLossBeforeTax	nvta_	xbrli:monetaryItemType	debit	instant	0	0
Money market funds | Recurring basis	us-gaap_FinancialInstrumentAxis=us-gaap_MoneyMarketFundsMember		na				
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Financial assets:	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesFairValue	nvta_	xbrli:monetaryItemType	debit	instant	864,694	83,109
Money market funds | Recurring basis | Level 1	us-gaap_FinancialInstrumentAxis=us-gaap_MoneyMarketFundsMember		na				
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Financial assets:	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesFairValue	nvta_	xbrli:monetaryItemType	debit	instant	864,694	83,109
Money market funds | Recurring basis | Level 2	us-gaap_FinancialInstrumentAxis=us-gaap_MoneyMarketFundsMember		na				
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Financial assets:	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesFairValue	nvta_	xbrli:monetaryItemType	debit	instant	0	0
Money market funds | Recurring basis | Level 3	us-gaap_FinancialInstrumentAxis=us-gaap_MoneyMarketFundsMember		na				
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Financial assets:	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesFairValue	nvta_	xbrli:monetaryItemType	debit	instant	0	0
U.S. Treasury notes	us-gaap_FinancialInstrumentAxis=us-gaap_USTreasurySecuritiesMember		na				

Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Amortized Cost	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesAmortizedCost	nvta_	xbrli:monetaryItemType	debit	instant	274,398	164,894
Unrealized Gains	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesAmortizedCostGrossUnrealizedGainBeforeTax	nvta_	xbrli:monetaryItemType	credit	instant	19	7
Unrealized Losses	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesAmortizedCostGrossUnrealizedLossBeforeTax	nvta_	xbrli:monetaryItemType	debit	instant	0	(15)
U.S. Treasury notes | Recurring basis	us-gaap_FinancialInstrumentAxis=us-gaap_USTreasurySecuritiesMember		na				
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Financial assets:	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesFairValue	nvta_	xbrli:monetaryItemType	debit	instant	274,417	164,886
U.S. Treasury notes | Recurring basis | Level 1	us-gaap_FinancialInstrumentAxis=us-gaap_USTreasurySecuritiesMember		na				
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Financial assets:	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesFairValue	nvta_	xbrli:monetaryItemType	debit	instant	274,417	164,886
U.S. Treasury notes | Recurring basis | Level 2	us-gaap_FinancialInstrumentAxis=us-gaap_USTreasurySecuritiesMember		na				
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Financial assets:	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesFairValue	nvta_	xbrli:monetaryItemType	debit	instant	0	0
U.S. Treasury notes | Recurring basis | Level 3	us-gaap_FinancialInstrumentAxis=us-gaap_USTreasurySecuritiesMember		na				
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Financial assets:	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesFairValue	nvta_	xbrli:monetaryItemType	debit	instant	0	0
U.S. government agency securities	us-gaap_FinancialInstrumentAxis=us-gaap_USGovernmentAgenciesDebtSecuritiesMember		na				
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Amortized Cost	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesAmortizedCost	nvta_	xbrli:monetaryItemType	debit	instant	46,046	64,291
Unrealized Gains	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesAmortizedCostGrossUnrealizedGainBeforeTax	nvta_	xbrli:monetaryItemType	credit	instant	2	9
Unrealized Losses	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesAmortizedCostGrossUnrealizedLossBeforeTax	nvta_	xbrli:monetaryItemType	debit	instant	0	0
U.S. government agency securities | Recurring basis	us-gaap_FinancialInstrumentAxis=us-gaap_USGovernmentAgenciesDebtSecuritiesMember		na				
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Financial assets:	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesFairValue	nvta_	xbrli:monetaryItemType	debit	instant	46,048	64,300
U.S. government agency securities | Recurring basis | Level 1	us-gaap_FinancialInstrumentAxis=us-gaap_USGovernmentAgenciesDebtSecuritiesMember		na				
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Financial assets:	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesFairValue	nvta_	xbrli:monetaryItemType	debit	instant	0	0
U.S. government agency securities | Recurring basis | Level 2	us-gaap_FinancialInstrumentAxis=us-gaap_USGovernmentAgenciesDebtSecuritiesMember		na				
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Financial assets:	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesFairValue	nvta_	xbrli:monetaryItemType	debit	instant	46,048	64,300
U.S. government agency securities | Recurring basis | Level 3	us-gaap_FinancialInstrumentAxis=us-gaap_USGovernmentAgenciesDebtSecuritiesMember		na				
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Financial assets:	nvta_CashEquivalentsRestrictedCashAndMarketableSecuritiesFairValue	nvta_	xbrli:monetaryItemType	debit	instant	0	0
Stock payable liability | Recurring basis	us-gaap_FinancialInstrumentAxis=us-gaap_AccruedLiabilitiesMember		na				
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Total financial liabilities	us-gaap_LiabilitiesFairValueDisclosure	us-gaap_	xbrli:monetaryItemType	credit	instant	34,087	39,237
Stock payable liability | Recurring basis | Level 1	us-gaap_FinancialInstrumentAxis=us-gaap_AccruedLiabilitiesMember		na				
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Total financial liabilities	us-gaap_LiabilitiesFairValueDisclosure	us-gaap_	xbrli:monetaryItemType	credit	instant	0	0
Stock payable liability | Recurring basis | Level 2	us-gaap_FinancialInstrumentAxis=us-gaap_AccruedLiabilitiesMember		na				
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Total financial liabilities	us-gaap_LiabilitiesFairValueDisclosure	us-gaap_	xbrli:monetaryItemType	credit	instant	0	0

Stock payable liability | Recurring basis | Level 3	us-gaap_FinancialInstrumentAxis=us-gaap_AccruedLiabilitiesMember		na					
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration			
Total financial liabilities	us-gaap_LiabilitiesFairValueDisclosure	us-gaap_	xbrli:monetaryItemType	credit	instant	34,087	39,237	
Contingent consideration | Recurring basis	us-gaap_FinancialInstrumentAxis=nvta_ContingentConsiderationMember		na					
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration			
Total financial liabilities	us-gaap_LiabilitiesFairValueDisclosure	us-gaap_	xbrli:monetaryItemType	credit	instant	1,685	796,639	
Contingent consideration | Recurring basis | Level 1	us-gaap_FinancialInstrumentAxis=nvta_ContingentConsiderationMember		na					
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration			
Total financial liabilities	us-gaap_LiabilitiesFairValueDisclosure	us-gaap_	xbrli:monetaryItemType	credit	instant	0	0	
Contingent consideration | Recurring basis | Level 2	us-gaap_FinancialInstrumentAxis=nvta_ContingentConsiderationMember		na					
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration			
Total financial liabilities	us-gaap_LiabilitiesFairValueDisclosure	us-gaap_	xbrli:monetaryItemType	credit	instant	0	0	
Contingent consideration | Recurring basis | Level 3	us-gaap_FinancialInstrumentAxis=nvta_ContingentConsiderationMember		na					
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration			
Total financial liabilities	us-gaap_LiabilitiesFairValueDisclosure	us-gaap_	xbrli:monetaryItemType	credit	instant	1,685	796,639	
Accrued liabilities	us-gaap_BalanceSheetLocationAxis=us-gaap_AccountsPayableAndAccruedLiabilitiesMember		na					
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration			
Total financial liabilities	us-gaap_LiabilitiesFairValueDisclosure	us-gaap_	xbrli:monetaryItemType	credit	instant	0	10,592	
Other long-term liabilities	us-gaap_BalanceSheetLocationAxis=us-gaap_OtherNoncurrentLiabilitiesMember		na					
Fair Value, Assets and Liabilities Measured on Recurring and Nonrecurring Basis [Line Items]	us-gaap_FairValueAssetsAndLiabilitiesMeasuredOnRecurringAndNonrecurringBasisLineItems	us-gaap_	xbrli:stringItemType	na	duration			
Total financial liabilities	us-gaap_LiabilitiesFairValueDisclosure	us-gaap_	xbrli:monetaryItemType	credit	instant	$ 35,772	$ 825,284	

+ References + Details

Cover - Fair value measurements - Additional information (Details)

Fair value measurements - Additional information (Details) - USD ($)	XBRL Details					3 Months Ended		9 Months Ended		
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Sep. 30, 2020	Sep. 30, 2021	Sep. 30, 2020	Dec. 31, 2020
Fair Value Disclosures [Abstract]	us-gaap_FairValueDisclosuresAbstract	us-gaap_	xbrli:stringItemType	na	duration					
Transfers of assets and liabilities between Level 1, Level 2 and Level 3	nvta_FairValueAssetsAndLiabilitiesLevel1Level2AndLevel3TransfersAmount	nvta_	xbrli:monetaryItemType	credit	instant	$ 0		$ 0		$ 0
Fair value of investments with unrealized losses	us-gaap_AvailableForSaleDebtSecuritiesGrossUnrealizedLoss	us-gaap_	xbrli:monetaryItemType	debit	duration			0		
Change in fair value, income (expense)	us-gaap_FairValueMeasurementWithUnobservableInputsReconciliationRecurringBasisLiabilityGainLossIncludedInEarnings	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 3,400,000	$ (16,200,000)	$ 9,200,000	$ (37,900,000)	

+ References + Details

Cover - Commitments and contingencies - Leases (Details)

Commitments and contingencies - Leases (Details) - USD ($) $ in Millions	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Dec. 31, 2016
Operating Leased Assets [Line Items]	us-gaap_OperatingLeasedAssetsLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Finance lease, term of contract	us-gaap_LesseeFinanceLeaseTermOfContract1	us-gaap_	xbrli:durationItemType	na	instant	3 years	
New Leases | Office Facility In San Francisco	us-gaap_TypeOfArrangementAxis=nvta_NewLeasesMember		na				
Operating Leased Assets [Line Items]	us-gaap_OperatingLeasedAssetsLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Operating lease, renewal term	us-gaap_LesseeOperatingLeaseRenewalTerm	us-gaap_	xbrli:durationItemType	na	instant		10 years
Operating lease, term of contract	us-gaap_LesseeOperatingLeaseTermOfContract	us-gaap_	xbrli:durationItemType	na	instant		10 years
Security deposit	us-gaap_SecurityDeposit	us-gaap_	xbrli:monetaryItemType	debit	instant		$ 4.6

+ References + Details

Cover - Commitments and contingencies - Debt financing (Details)

Commitments and contingencies - Debt financing (Details) - USD ($)	XBRL Details					1 Months Ended	3 Months Ended		9 Months Ended			
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Oct. 31, 2020	Sep. 30, 2021	Sep. 30, 2020	Sep. 30, 2021	Sep. 30, 2020	Dec. 31, 2020	Sep. 30, 2019
Convertible debt	us-gaap_LongtermDebtTypeAxis=us-gaap_ConvertibleDebtMember		na									
Long-term Purchase Commitment [Line Items]	us-gaap_LongTermPurchaseCommitmentLineItems	us-gaap_	xbrli:stringItemType	na	duration							
Debt discounts and issuance costs	us-gaap_DebtInstrumentUnamortizedDiscountPremiumAndDebtIssuanceCostsNet	us-gaap_	xbrli:monetaryItemType	debit	instant		$ 37,497,000		$ 37,497,000		$ 66,276,000	
Interest expense	us-gaap_InterestExpenseDebt	us-gaap_	xbrli:monetaryItemType	debit	duration		7,700,000	$ 5,500,000	17,200,000	$ 16,400,000		
2020 Term Loan | Secured Debt	us-gaap_DebtInstrumentAxis=nvta_SeniorSecuredTermLoanFacilityMember		na									
Long-term Purchase Commitment [Line Items]	us-gaap_LongTermPurchaseCommitmentLineItems	us-gaap_	xbrli:stringItemType	na	duration							
Aggregate principal amount	us-gaap_DebtInstrumentFaceAmount	us-gaap_	xbrli:monetaryItemType	credit	instant	$ 135,000,000						
Days prior to convertible debt extended maturity date	nvta_DebtInstrumentMaturityTermsDaysPriorToConvertibleDebtExtendedMaturityDate	nvta_	xbrli:durationItemType	na	duration	90 days						
Debt discounts and issuance costs	us-gaap_DebtInstrumentUnamortizedDiscountPremiumAndDebtIssuanceCostsNet	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 32,800,000						
Interest expense	us-gaap_InterestExpenseDebt	us-gaap_	xbrli:monetaryItemType	debit	duration		$ 5,900,000	$ 0	$ 17,700,000	$ 0		
2020 Term Loan | Secured Debt | LIBOR	us-gaap_DebtInstrumentAxis=nvta_SeniorSecuredTermLoanFacilityMember		na									
Long-term Purchase Commitment [Line Items]	us-gaap_LongTermPurchaseCommitmentLineItems	us-gaap_	xbrli:stringItemType	na	duration							
Floor rate	nvta_DebtInstrumentInterestRateFloorRate	nvta_	dtr-types:percentItemType	na	duration	2.00%						
Basis spread on variable rate	us-gaap_DebtInstrumentBasisSpreadOnVariableRate1	us-gaap_	dtr-types:percentItemType	na	duration	8.75%						
2024 Notes | Convertible debt	us-gaap_DebtInstrumentAxis=nvta_ConvertibleSeniorNotesDue2024Member		na									
Long-term Purchase Commitment [Line Items]	us-gaap_LongTermPurchaseCommitmentLineItems	us-gaap_	xbrli:stringItemType	na	duration							
Aggregate principal amount	us-gaap_DebtInstrumentFaceAmount	us-gaap_	xbrli:monetaryItemType	credit	instant							$ 350,000,000
Percent of debt extended	nvta_DebtInstrumentMaturityTermsPercentOfDebtExtended	nvta_	dtr-types:percentItemType	na	duration	80.00%						

+ References + Details

Cover - Commitments and contingencies - Components of debt (Details)

Commitments and contingencies - Components of debt (Details) - Convertible debt - USD ($) $ in Thousands	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Dec. 31, 2020
Debt Instrument [Line Items]	us-gaap_DebtInstrumentLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Outstanding principal	us-gaap_DebtInstrumentCarryingAmount	us-gaap_	xbrli:monetaryItemType	credit	instant	$ 1,499,996	$ 350,000
Unamortized debt discount and issuance costs	us-gaap_DebtInstrumentUnamortizedDiscountPremiumAndDebtIssuanceCostsNet	us-gaap_	xbrli:monetaryItemType	debit	instant	(37,497)	(66,276)
Net carrying amount, liability component	us-gaap_LongTermDebt	us-gaap_	xbrli:monetaryItemType	credit	instant	$ 1,462,499	$ 283,724

+ References + Details

Cover - Commitments and contingencies - Other commitments and contingencies (Details)

Commitments and contingencies - Other commitments and contingencies (Details) - USD ($) $ in Millions	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Aug. 27, 2021	Sep. 30, 2021
Positive outcome of litigation	us-gaap_GainContingenciesByNatureAxis=us-gaap_PositiveOutcomeOfLitigationMember		na				
Debt Instrument [Line Items]	us-gaap_DebtInstrumentLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Litigation Settlement, Amount Awarded from Other Party	us-gaap_LitigationSettlementAmountAwardedFromOtherParty	us-gaap_	xbrli:monetaryItemType	debit	duration	$ 4.7	
Service agreements and laboratory supplies	us-gaap_RecordedUnconditionalPurchaseObligationByCategoryOfItemPurchasedAxis=nvta_ServiceAgreementsAndLaboratorySuppliesMember		na				
Debt Instrument [Line Items]	us-gaap_DebtInstrumentLineItems	us-gaap_	xbrli:stringItemType	na	duration		
Noncancelable unconditional purchase commitments	nvta_RecordedUnconditionalPurchaseObligationDueOverOneYear	nvta_	xbrli:monetaryItemType	credit	instant		$ 66.7

+ References + Details

Cover - Stockholders' equity - Schedule of convertible preferred and common stock (Details)

Stockholders' equity - Schedule of convertible preferred and common stock (Details) - shares shares in Thousands	XBRL Details					3 Months Ended		9 Months Ended	
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Sep. 30, 2020	Sep. 30, 2021	Sep. 30, 2020
Convertible preferred stock:	us-gaap_StatementEquityComponentsAxis=us-gaap_PreferredStockMember		na						
Increase (Decrease) in Stockholders' Equity [Roll Forward]	us-gaap_IncreaseDecreaseInStockholdersEquityRollForward	us-gaap_	xbrli:stringItemType	na	duration				
Shares outstanding, beginning of period	us-gaap_SharesOutstanding	us-gaap_	xbrli:sharesItemType	na	instant	125	125	125	125
Common stock issued upon conversion of preferred stock (in shares)	us-gaap_ConversionOfStockSharesConverted1	us-gaap_	xbrli:sharesItemType	na	duration	125	0	125	0
Shares outstanding, end of period	us-gaap_SharesOutstanding	us-gaap_	xbrli:sharesItemType	na	instant	0	125	0	125
Common stock:	us-gaap_StatementEquityComponentsAxis=us-gaap_CommonStockMember		na						
Increase (Decrease) in Stockholders' Equity [Roll Forward]	us-gaap_IncreaseDecreaseInStockholdersEquityRollForward	us-gaap_	xbrli:stringItemType	na	duration				
Shares outstanding, beginning of period	us-gaap_SharesOutstanding	us-gaap_	xbrli:sharesItemType	na	instant	203,018	131,289	185,886	98,796
Common stock issued in connection with public offering (in shares)	us-gaap_StockIssuedDuringPeriodSharesNewIssues	us-gaap_	xbrli:sharesItemType	na	duration	0	0	8,932	23,058
Common stock issued on exercise of stock options, net (in shares)	us-gaap_StockIssuedDuringPeriodSharesStockOptionsExercised	us-gaap_	xbrli:sharesItemType	na	duration	1,361	245	1,940	553
Common stock issued pursuant to vesting of RSUs (in shares)	us-gaap_StockIssuedDuringPeriodSharesRestrictedStockAwardGross	us-gaap_	xbrli:sharesItemType	na	duration	718	1,322	4,101	4,803
Common stock issued pursuant to exercises of warrants (in shares)	nvta_StockIssuedDuringPeriodSharesWarrantsExercised	nvta_	xbrli:sharesItemType	na	duration	0	54	208	202
Common stock issued pursuant to employee stock purchase plan (in shares)	us-gaap_StockIssuedDuringPeriodSharesEmployeeStockPurchasePlans	us-gaap_	xbrli:sharesItemType	na	duration	0	0	271	342
Common stock issued pursuant to business combinations (in shares)	us-gaap_StockIssuedDuringPeriodSharesAcquisitions	us-gaap_	xbrli:sharesItemType	na	duration	21,005	358	24,764	5,514
Common stock issued upon conversion of preferred stock (in shares)	us-gaap_ConversionOfStockSharesConverted1	us-gaap_	xbrli:sharesItemType	na	duration	125	0	125	0
Shares outstanding, end of period	us-gaap_SharesOutstanding	us-gaap_	xbrli:sharesItemType	na	instant	226,227	133,268	226,227	133,268

+ References + Details

Cover - Stockholders' equity - Additional information (Details)

Stockholders' equity - Additional information (Details) $ / shares in Units, $ in Thousands	XBRL Details					1 Months Ended						3 Months Ended		9 Months Ended		36 Months Ended	
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	May 30, 2021 USD ($)	Jan. 31, 2021 USD ($) / shares shares	Oct. 31, 2020 USD ($)	Jun. 30, 2020 USD ($) $ / shares	Apr. 30, 2020 USD ($) $ / shares shares	Mar. 31, 2019 USD ($)	Aug. 31, 2018 USD ($)	Sep. 30, 2021 shares	Sep. 30, 2020 shares	Sep. 30, 2021 USD ($) shares	Sep. 30, 2020 USD ($) shares	Dec. 31, 2020 USD ($) shares	Aug. 31, 2017 $ / shares
Class of Stock [Line Items]	us-gaap_ClassOfStockLineItems	us-gaap_	xbrli:stringItemType	na	duration													
Proceeds from issuance of common stock	us-gaap_ProceedsFromIssuanceOfCommonStock	us-gaap_	xbrli:monetaryItemType	debit	duration									$ 15,810	$ 9,076		
Series A convertible preferred stock	us-gaap_StatementClassOfStockAxis=us-gaap_ConvertiblePreferredStockMember		na														
Class of Stock [Line Items]	us-gaap_ClassOfStockLineItems	us-gaap_	xbrli:stringItemType	na	duration												
Preferred stock, conversion ratio	us-gaap_PreferredStockConvertibleConversionRatio	us-gaap_	xbrli:pureItemType	na	instant												1
Preferred stock, par value (in dollars per share) | $ / shares	us-gaap_PreferredStockParOrStatedValuePerShare	us-gaap_	dtr-types:perShareItemType	na	instant												$ 0.0001
Liquidation preference per share (in dollars per share) | $ / shares	us-gaap_PreferredStockLiquidationPreference	us-gaap_	dtr-types:perShareItemType	na	instant												$ 0.001
Preferred stock, outstanding (in shares) | shares	us-gaap_PreferredStockSharesOutstanding	us-gaap_	xbrli:sharesItemType	na	instant								0	0			
Underwritten public offering	us-gaap_SubsidiarySaleOfStockAxis=nvta_UnderwrittenPublicOfferingMember		na														
Class of Stock [Line Items]	us-gaap_ClassOfStockLineItems	us-gaap_	xbrli:stringItemType	na	duration												
Proceeds from issuance of common stock	us-gaap_ProceedsFromIssuanceOfCommonStock	us-gaap_	xbrli:monetaryItemType	debit	duration		$ 460,000										
Net proceeds from issuance of common stock	us-gaap_SaleOfStockConsiderationReceivedOnTransaction	us-gaap_	xbrli:monetaryItemType	debit	duration		$ 434,300										
Convertible preferred stock:	us-gaap_StatementEquityComponentsAxis=us-gaap_PreferredStockMember		na														
Class of Stock [Line Items]	us-gaap_ClassOfStockLineItems	us-gaap_	xbrli:stringItemType	na	duration												
Conversion of stock, shares converted (in shares) | shares	us-gaap_ConversionOfStockSharesConverted1	us-gaap_	xbrli:sharesItemType	na	duration								125,000	0	125,000	0		
Convertible preferred stock: | Series A convertible preferred stock	us-gaap_StatementEquityComponentsAxis=us-gaap_PreferredStockMember		na														
Class of Stock [Line Items]	us-gaap_ClassOfStockLineItems	us-gaap_	xbrli:stringItemType	na	duration												
Conversion of stock, shares converted (in shares) | shares	us-gaap_ConversionOfStockSharesConverted1	us-gaap_	xbrli:sharesItemType	na	duration								124,913					
Common stock	us-gaap_StatementEquityComponentsAxis=us-gaap_CommonStockMember		na														
Class of Stock [Line Items]	us-gaap_ClassOfStockLineItems	us-gaap_	xbrli:stringItemType	na	duration												
Conversion of stock, shares converted (in shares) | shares	us-gaap_ConversionOfStockSharesConverted1	us-gaap_	xbrli:sharesItemType	na	duration								125,000	0	125,000	0		
Conversion of stock, shares issued (in shares) | shares	us-gaap_ConversionOfStockSharesIssued1	us-gaap_	xbrli:sharesItemType	na	duration								124,913					
Common stock issued in connection with public offering (in shares) | shares	us-gaap_StockIssuedDuringPeriodSharesNewIssues	us-gaap_	xbrli:sharesItemType	na	duration								0	0	8,932,000	23,058,000		
Common stock | Underwritten public offering	us-gaap_StatementEquityComponentsAxis=us-gaap_CommonStockMember		na															
Class of Stock [Line Items]	us-gaap_ClassOfStockLineItems	us-gaap_	xbrli:stringItemType	na	duration													
Proceeds from issuance of common stock	us-gaap_ProceedsFromIssuanceOfCommonStock	us-gaap_	xbrli:monetaryItemType	debit	duration					$ 184,000								
Net proceeds from issuance of common stock	us-gaap_SaleOfStockConsiderationReceivedOnTransaction	us-gaap_	xbrli:monetaryItemType	debit	duration					$ 173,000								
Number of shares sold in underwritten public offering | shares	us-gaap_SaleOfStockNumberOfSharesIssuedInTransaction	us-gaap_	xbrli:sharesItemType	na	duration		8,900,000			20,400,000								
Shares issued price per share (in dollars per share) | $ / shares	us-gaap_SaleOfStockPricePerShare	us-gaap_	dtr-types:perShareItemType	na	instant		$ 51.50			$ 9.00								
Common stock | Private placement | ArcherDX	us-gaap_StatementEquityComponentsAxis=us-gaap_CommonStockMember		na															
Class of Stock [Line Items]	us-gaap_ClassOfStockLineItems	us-gaap_	xbrli:stringItemType	na	duration													
Proceeds from issuance of common stock	us-gaap_ProceedsFromIssuanceOfCommonStock	us-gaap_	xbrli:monetaryItemType	debit	duration				$ 275,000									
Net proceeds from issuance of common stock	us-gaap_SaleOfStockConsiderationReceivedOnTransaction	us-gaap_	xbrli:monetaryItemType	debit	duration			$ 263,700										
Shares issued price per share (in dollars per share) | $ / shares	us-gaap_SaleOfStockPricePerShare	us-gaap_	dtr-types:perShareItemType	na	instant				$ 16.85									
2018 Sales Agreement | Cowen and Company, LLC	us-gaap_TransactionTypeAxis=nvta_CommonStockSalesAgreementMember		na															
Class of Stock [Line Items]	us-gaap_ClassOfStockLineItems	us-gaap_	xbrli:stringItemType	na	duration													
Percentage of commission payable on gross proceeds	nvta_PercentageOfCommissionPayableOnGrossProceeds	nvta_	dtr-types:percentItemType	na	duration	3.00%						3.00%						
2018 Sales Agreement | Maximum | Cowen and Company, LLC	us-gaap_TransactionTypeAxis=nvta_CommonStockSalesAgreementMember		na															
Class of Stock [Line Items]	us-gaap_ClassOfStockLineItems	us-gaap_	xbrli:stringItemType	na	duration													
Proceeds from issuance of common stock	us-gaap_ProceedsFromIssuanceOfCommonStock	us-gaap_	xbrli:monetaryItemType	debit	duration	$ 400,000					$ 175,000	$ 75,000						
2018 Sales Agreement | Common stock | Cowen and Company, LLC	us-gaap_TransactionTypeAxis=nvta_CommonStockSalesAgreementMember		na															
Class of Stock [Line Items]	us-gaap_ClassOfStockLineItems	us-gaap_	xbrli:stringItemType	na	duration													
Proceeds from issuance of common stock	us-gaap_ProceedsFromIssuanceOfCommonStock	us-gaap_	xbrli:monetaryItemType	debit	duration												$ 175,000	
Common stock issued in connection with public offering (in shares) | shares	us-gaap_StockIssuedDuringPeriodSharesNewIssues	us-gaap_	xbrli:sharesItemType	na	duration												8,700,000	
Net proceeds from issuance of common stock	us-gaap_SaleOfStockConsiderationReceivedOnTransaction	us-gaap_	xbrli:monetaryItemType	debit	duration												$ 169,100	

+ References + Details

Cover - Stock incentive plans - Additional information (Details)

Stock incentive plans - Additional information (Details) - shares shares in Millions	XBRL Details					1 Months Ended		9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Oct. 31, 2020	Jun. 30, 2019	Sep. 30, 2021
Stock incentive plans	us-gaap_PlanNameAxis=nvta_StockIncentivePlanMember		na					
Stock incentive plan	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardLineItems	us-gaap_	xbrli:stringItemType	na	duration			
Vesting period	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardAwardVestingPeriod1	us-gaap_	xbrli:durationItemType	na	duration			4 years
Stock incentive plans | RSU	us-gaap_PlanNameAxis=nvta_StockIncentivePlanMember		na					
Stock incentive plan	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardLineItems	us-gaap_	xbrli:stringItemType	na	duration			
Vesting period	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardAwardVestingPeriod1	us-gaap_	xbrli:durationItemType	na	duration			3 years
Stock incentive plans | PRSU	us-gaap_PlanNameAxis=nvta_StockIncentivePlanMember		na					
Stock incentive plan	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardLineItems	us-gaap_	xbrli:stringItemType	na	duration			
Vesting period	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardAwardVestingPeriod1	us-gaap_	xbrli:durationItemType	na	duration			2 years
Stock incentive plans | Stock options	us-gaap_PlanNameAxis=nvta_StockIncentivePlanMember		na					
Stock incentive plan	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardLineItems	us-gaap_	xbrli:stringItemType	na	duration			
Vesting rate upon anniversaries	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardAwardVestingRightsPercentage	us-gaap_	dtr-types:percentItemType	na	duration			25.00%
Monthly vesting rate thereafter	nvta_ShareBasedCompensationArrangementByShareBasedPaymentAwardVestingRightsEqualMonthlyVestingPercentage	nvta_	dtr-types:percentItemType	na	duration			2.08%
Stock incentive plans | First anniversary | RSU	us-gaap_PlanNameAxis=nvta_StockIncentivePlanMember		na					
Stock incentive plan	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardLineItems	us-gaap_	xbrli:stringItemType	na	duration			
Vesting rate upon anniversaries	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardAwardVestingRightsPercentage	us-gaap_	dtr-types:percentItemType	na	duration			33.33%
Stock incentive plans | Second anniversary | RSU	us-gaap_PlanNameAxis=nvta_StockIncentivePlanMember		na					
Stock incentive plan	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardLineItems	us-gaap_	xbrli:stringItemType	na	duration			
Vesting rate upon anniversaries	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardAwardVestingRightsPercentage	us-gaap_	dtr-types:percentItemType	na	duration			33.33%
Stock incentive plans | Third anniversary | RSU	us-gaap_PlanNameAxis=nvta_StockIncentivePlanMember		na					
Stock incentive plan	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardLineItems	us-gaap_	xbrli:stringItemType	na	duration			
Vesting rate upon anniversaries	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardAwardVestingRightsPercentage	us-gaap_	dtr-types:percentItemType	na	duration			33.33%
Minimum | 2010 Plan	srt_RangeAxis=srt_MinimumMember		na					
Stock incentive plan	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardLineItems	us-gaap_	xbrli:stringItemType	na	duration			
Employees holding voting rights of all classes of stock	nvta_ShareBasedCompensationArrangementByShareBasedPaymentAwardVotingRightsOfCommonStockHoldingPercentage	nvta_	dtr-types:percentItemType	na	duration			10.00%
Exercise price of options on common stock	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardPurchasePriceOfCommonStockPercent	us-gaap_	dtr-types:percentItemType	na	duration			110.00%
Maximum | 2010 Plan	srt_RangeAxis=srt_MaximumMember		na					
Stock incentive plan	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardLineItems	us-gaap_	xbrli:stringItemType	na	duration			
Term of options granted	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardExpirationPeriod	us-gaap_	xbrli:durationItemType	na	duration			10 years
ArcherDX | Stock incentive plans | Stock options	us-gaap_BusinessAcquisitionAxis=nvta_ArcherDXInc.Member		na					
Stock incentive plan	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardLineItems	us-gaap_	xbrli:stringItemType	na	duration			
Number of options issued and vested (in shares)	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardOptionsVestedNumberOfShares	us-gaap_	xbrli:sharesItemType	na	duration	3.7		
Singular Bio | Stock incentive plans | PRSU	us-gaap_BusinessAcquisitionAxis=nvta_SingularBioMember		na					
Stock incentive plan	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardLineItems	us-gaap_	xbrli:stringItemType	na	duration			
Vesting period	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardAwardVestingPeriod1	us-gaap_	xbrli:durationItemType	na	duration			18 months
Singular Bio | Stock incentive plans | First anniversary | RSU	us-gaap_BusinessAcquisitionAxis=nvta_SingularBioMember		na					
Stock incentive plan	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardLineItems	us-gaap_	xbrli:stringItemType	na	duration			
Vesting rate upon anniversaries	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardAwardVestingRightsPercentage	us-gaap_	dtr-types:percentItemType	na	duration		33.33%	
Singular Bio | Stock incentive plans | Second anniversary | RSU	us-gaap_BusinessAcquisitionAxis=nvta_SingularBioMember		na					
Stock incentive plan	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardLineItems	us-gaap_	xbrli:stringItemType	na	duration			
Vesting rate upon anniversaries	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardAwardVestingRightsPercentage	us-gaap_	dtr-types:percentItemType	na	duration		33.33%	
Singular Bio | Stock incentive plans | Third anniversary | RSU	us-gaap_BusinessAcquisitionAxis=nvta_SingularBioMember		na					
Stock incentive plan	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardLineItems	us-gaap_	xbrli:stringItemType	na	duration			
Vesting rate upon anniversaries	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardAwardVestingRightsPercentage	us-gaap_	dtr-types:percentItemType	na	duration		33.33%	

+ References + Details

Cover - Stock incentive plans - Schedule of activity under the plans (Details)

Stock incentive plans - Schedule of activity under the plans (Details) $ / shares in Units, shares in Thousands, $ in Thousands	XBRL Details					9 Months Ended	12 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021 USD ($) $ / shares shares	Dec. 31, 2020 USD ($) $ / shares shares
RSUs and PRSUs	us-gaap_AwardTypeAxis=nvta_RSUsAndPRSUsMember		na				
Activity under the plan	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardOptionsOutstandingRollForward	us-gaap_	xbrli:stringItemType	na	duration		
Granted (in shares)	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardEquityInstrumentsOtherThanOptionsGrantsInPeriod	us-gaap_	xbrli:sharesItemType	na	duration	(13,853)	
Cancelled (in shares)	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardEquityInstrumentsOtherThanOptionsForfeitedInPeriod	us-gaap_	xbrli:sharesItemType	na	duration	842	
Stock incentive plans | Stock options	us-gaap_PlanNameAxis=nvta_StockIncentivePlanMember		na				
Activity under the plan	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardOptionsOutstandingRollForward	us-gaap_	xbrli:stringItemType	na	duration		
Shares available for grant, beginning balance (in shares)	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardNumberOfSharesAvailableForGrant	us-gaap_	xbrli:sharesItemType	na	instant	7,447	
Stock options outstanding, beginning balance (in shares)	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardOptionsOutstandingNumber	us-gaap_	xbrli:sharesItemType	na	instant	4,877	
Additional shares reserved (in shares)	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardNumberOfAdditionalSharesAuthorized	us-gaap_	xbrli:sharesItemType	na	duration	16,738	
Options granted (in shares)	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardOptionsGrantsInPeriodGross	us-gaap_	xbrli:sharesItemType	na	duration	244	
Options cancelled (in shares)	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardOptionsForfeituresInPeriod	us-gaap_	xbrli:sharesItemType	na	duration	(40)	
Options exercised (in shares)	us-gaap_StockIssuedDuringPeriodSharesStockOptionsExercised	us-gaap_	xbrli:sharesItemType	na	duration	(1,940)	
Shares available for grant, ending balance (in shares)	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardNumberOfSharesAvailableForGrant	us-gaap_	xbrli:sharesItemType	na	instant	10,970	7,447
Stock options outstanding, ending balance (in shares)	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardOptionsOutstandingNumber	us-gaap_	xbrli:sharesItemType	na	instant	3,141	4,877
Weighted-Average Exercise Price	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardOptionsOutstandingWeightedAverageExercisePriceRollforward	us-gaap_	xbrli:stringItemType	na	duration		
Balance at the beginning of the period (in dollars per share) | $ / shares	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardOptionsOutstandingWeightedAverageExercisePrice	us-gaap_	dtr-types:perShareItemType	na	instant	$ 7.75	
Options granted (in dollars per share) | $ / shares	us-gaap_ShareBasedCompensationArrangementsByShareBasedPaymentAwardOptionsGrantsInPeriodWeightedAverageExercisePrice	us-gaap_	dtr-types:perShareItemType	na	duration	34.90	
Options cancelled (in dollars per share) | $ / shares	us-gaap_ShareBasedCompensationArrangementsByShareBasedPaymentAwardOptionsForfeituresInPeriodWeightedAverageExercisePrice	us-gaap_	dtr-types:perShareItemType	na	duration	26.64	
Options exercised (in dollars per share) | $ / shares	us-gaap_ShareBasedCompensationArrangementsByShareBasedPaymentAwardOptionsExercisesInPeriodWeightedAverageExercisePrice	us-gaap_	dtr-types:perShareItemType	na	duration	4.21	
Balance at the end of the period (in dollars per share) | $ / shares	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardOptionsOutstandingWeightedAverageExercisePrice	us-gaap_	dtr-types:perShareItemType	na	instant	$ 11.80	$ 7.75
Additional information	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardOptionsAdditionalDisclosuresAbstract	us-gaap_	xbrli:stringItemType	na	duration		
Exercisable, number of shares	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardOptionsExercisableNumber	us-gaap_	xbrli:sharesItemType	na	instant	2,687	
Exercisable, weighted-average exercise price (in dollars per share) | $ / shares	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardOptionsExercisableWeightedAverageExercisePrice	us-gaap_	dtr-types:perShareItemType	na	instant	$ 9.45	
Weighted-average remaining contractual life	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardOptionsOutstandingWeightedAverageRemainingContractualTerm2	us-gaap_	xbrli:durationItemType	na	duration	5 years 9 months 18 days	6 years 9 months 18 days
Aggregate Intrinsic Value | $	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardOptionsOutstandingIntrinsicValue	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 53,737	$ 166,130
Exercisable, weighted-average remaining contractual life	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardOptionsExercisableWeightedAverageRemainingContractualTerm1	us-gaap_	xbrli:durationItemType	na	duration	5 years 3 months 18 days	
Exercisable, aggregate intrinsic value | $	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardOptionsExercisableIntrinsicValue1	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 51,080	
Vested and expected to vest	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardOptionsVestedAndExpectedToVestAbstract	us-gaap_	xbrli:stringItemType	na	duration		
Number of shares	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardOptionsVestedAndExpectedToVestOutstandingNumber	us-gaap_	xbrli:sharesItemType	na	instant	3,113	
Weighted-average exercise price (in dollars per share) | $ / shares	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardOptionsVestedAndExpectedToVestOutstandingWeightedAverageExercisePrice	us-gaap_	dtr-types:perShareItemType	na	instant	$ 11.74	
Weighted-average remaining contractual life	us-gaap_SharebasedCompensationArrangementBySharebasedPaymentAwardOptionsVestedAndExpectedToVestOutstandingWeightedAverageRemainingContractualTerm1	us-gaap_	xbrli:durationItemType	na	duration	5 years 9 months 18 days	
Aggregate intrinsic value | $	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardOptionsVestedAndExpectedToVestOutstandingAggregateIntrinsicValue	us-gaap_	xbrli:monetaryItemType	debit	instant	$ 53,440	
Stock incentive plans | RSUs and PRSUs	us-gaap_PlanNameAxis=nvta_StockIncentivePlanMember		na				
Activity under the plan	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardOptionsOutstandingRollForward	us-gaap_	xbrli:stringItemType	na	duration		
Granted (in shares)	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardEquityInstrumentsOtherThanOptionsGrantsInPeriod	us-gaap_	xbrli:sharesItemType	na	duration	(13,853)	
Cancelled (in shares)	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardEquityInstrumentsOtherThanOptionsForfeitedInPeriod	us-gaap_	xbrli:sharesItemType	na	duration	842	

+ References + Details

Cover - Stock incentive plans - Summary of RSU activity (Details)

Stock incentive plans - Summary of RSU activity (Details) - RSUs and PRSUs shares in Thousands	XBRL Details					9 Months Ended
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021 $ / shares shares
Number of Shares	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardEquityInstrumentsOtherThanOptionsNonvestedRollForward	us-gaap_	xbrli:stringItemType	na	duration	
Balance at the beginning of the period (in shares) | shares	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardEquityInstrumentsOtherThanOptionsNonvestedNumber	us-gaap_	xbrli:sharesItemType	na	instant	6,602
Granted (in shares) | shares	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardEquityInstrumentsOtherThanOptionsGrantsInPeriod	us-gaap_	xbrli:sharesItemType	na	duration	13,853
Vested stock units awarded (in shares) | shares	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardEquityInstrumentsOtherThanOptionsVestedInPeriod	us-gaap_	xbrli:sharesItemType	na	duration	(4,101)
Cancelled (in shares) | shares	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardEquityInstrumentsOtherThanOptionsForfeitedInPeriod	us-gaap_	xbrli:sharesItemType	na	duration	(842)
Balance at the end of the period (in shares) | shares	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardEquityInstrumentsOtherThanOptionsNonvestedNumber	us-gaap_	xbrli:sharesItemType	na	instant	15,512
Weighted- Average Grant Date Fair Value Per Share	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardEquityInstrumentsOtherThanOptionsNonvestedWeightedAverageGrantDateFairValueRollForward	us-gaap_	xbrli:stringItemType	na	duration	
Balance at the beginning of the period (in dollars per share) | $ / shares	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardEquityInstrumentsOtherThanOptionsNonvestedWeightedAverageGrantDateFairValue	us-gaap_	dtr-types:perShareItemType	na	instant	$ 12.89
Granted (in dollars per share) | $ / shares	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardEquityInstrumentsOtherThanOptionsGrantsInPeriodWeightedAverageGrantDateFairValue	us-gaap_	dtr-types:perShareItemType	na	duration	30.53
Vested (in dollars per share) | $ / shares	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardEquityInstrumentsOtherThanOptionsVestedInPeriodWeightedAverageGrantDateFairValue	us-gaap_	dtr-types:perShareItemType	na	duration	21.17
Cancelled (in dollars per share) | $ / shares	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardEquityInstrumentsOtherThanOptionsForfeituresWeightedAverageGrantDateFairValue	us-gaap_	dtr-types:perShareItemType	na	duration	25.53
Balance at the end of the period (in dollars per share) | $ / shares	us-gaap_ShareBasedCompensationArrangementByShareBasedPaymentAwardEquityInstrumentsOtherThanOptionsNonvestedWeightedAverageGrantDateFairValue	us-gaap_	dtr-types:perShareItemType	na	instant	$ 25.76

+ References + Details

Cover - Stock incentive plans - Summary of stock based compensation expense (Details)

Stock incentive plans - Summary of stock based compensation expense (Details) - USD ($) $ in Thousands	XBRL Details					3 Months Ended		9 Months Ended	
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Sep. 30, 2020	Sep. 30, 2021	Sep. 30, 2020
Stock-based compensation	us-gaap_EmployeeServiceShareBasedCompensationAllocationOfRecognizedPeriodCostsLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total stock-based compensation expense	us-gaap_AllocatedShareBasedCompensationExpense	us-gaap_	xbrli:monetaryItemType	debit	duration	$ 25,446	$ 21,205	$ 131,782	$ 102,329
Cost of revenue	us-gaap_IncomeStatementLocationAxis=us-gaap_CostOfSalesMember		na						
Stock-based compensation	us-gaap_EmployeeServiceShareBasedCompensationAllocationOfRecognizedPeriodCostsLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total stock-based compensation expense	us-gaap_AllocatedShareBasedCompensationExpense	us-gaap_	xbrli:monetaryItemType	debit	duration	2,010	2,104	9,668	5,321
Research and development	us-gaap_IncomeStatementLocationAxis=nvta_ResearchAndDevelopmentMember		na						
Stock-based compensation	us-gaap_EmployeeServiceShareBasedCompensationAllocationOfRecognizedPeriodCostsLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total stock-based compensation expense	us-gaap_AllocatedShareBasedCompensationExpense	us-gaap_	xbrli:monetaryItemType	debit	duration	12,104	7,185	58,441	70,954
Selling and marketing	us-gaap_IncomeStatementLocationAxis=us-gaap_SellingAndMarketingExpenseMember		na						
Stock-based compensation	us-gaap_EmployeeServiceShareBasedCompensationAllocationOfRecognizedPeriodCostsLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total stock-based compensation expense	us-gaap_AllocatedShareBasedCompensationExpense	us-gaap_	xbrli:monetaryItemType	debit	duration	2,457	4,078	12,797	9,198
General and administrative	us-gaap_IncomeStatementLocationAxis=us-gaap_GeneralAndAdministrativeExpenseMember		na						
Stock-based compensation	us-gaap_EmployeeServiceShareBasedCompensationAllocationOfRecognizedPeriodCostsLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total stock-based compensation expense	us-gaap_AllocatedShareBasedCompensationExpense	us-gaap_	xbrli:monetaryItemType	debit	duration	$ 8,875	$ 7,838	$ 50,876	$ 16,856

+ References + Details

Cover - Net loss per share - Schedule of earnings per share, basic and diluted (Details)

Net loss per share - Schedule of earnings per share, basic and diluted (Details) - USD ($) $ / shares in Units, shares in Thousands, $ in Thousands	XBRL Details					3 Months Ended		9 Months Ended	
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Sep. 30, 2020	Sep. 30, 2021	Sep. 30, 2020
Earnings Per Share [Abstract]	us-gaap_EarningsPerShareAbstract	us-gaap_	xbrli:stringItemType	na	duration				
Net loss	us-gaap_NetIncomeLoss	us-gaap_	xbrli:monetaryItemType	credit	duration	$ (198,176)	$ (102,902)	$ (173,882)	$ (367,832)
Shares used in computing net loss per share, basic	us-gaap_WeightedAverageNumberOfSharesOutstandingBasic	us-gaap_	xbrli:sharesItemType	na	duration	218,384	132,484	205,587	119,386
Shares used in computing net loss per share, diluted	us-gaap_WeightedAverageNumberOfDilutedSharesOutstanding	us-gaap_	xbrli:sharesItemType	na	duration	218,384	132,484	205,587	119,386
Net loss per share, basic (in dollars per share)	us-gaap_EarningsPerShareBasic	us-gaap_	dtr-types:perShareItemType	na	duration	$ (0.91)	$ (0.78)	$ (0.85)	$ (3.08)
Net loss per share, diluted (in dollars per share)	us-gaap_EarningsPerShareDiluted	us-gaap_	dtr-types:perShareItemType	na	duration	$ (0.91)	$ (0.78)	$ (0.85)	$ (3.08)

+ Details

Cover - Net loss per share - Schedule of antidilutive securities excluded from computation of earnings per share (Details)

Net loss per share - Schedule of antidilutive securities excluded from computation of earnings per share (Details) - shares shares in Thousands	XBRL Details					3 Months Ended		9 Months Ended	
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Sep. 30, 2020	Sep. 30, 2021	Sep. 30, 2020
Antidilutive shares excluded from diluted net loss per share	us-gaap_EarningsPerShareBasicAndDilutedOtherDisclosuresAbstract	us-gaap_	xbrli:stringItemType	na	duration				
Total shares of common stock equivalents (in shares)	us-gaap_AntidilutiveSecuritiesExcludedFromComputationOfEarningsPerShareAmount	us-gaap_	xbrli:sharesItemType	na	duration	51,549	19,537	50,969	19,864
Shares of common stock subject to outstanding options	us-gaap_AntidilutiveSecuritiesExcludedFromComputationOfEarningsPerShareByAntidilutiveSecuritiesAxis=us-gaap_EmployeeStockOptionMember		na						
Antidilutive shares excluded from diluted net loss per share	us-gaap_EarningsPerShareBasicAndDilutedOtherDisclosuresAbstract	us-gaap_	xbrli:stringItemType	na	duration				
Total shares of common stock equivalents (in shares)	us-gaap_AntidilutiveSecuritiesExcludedFromComputationOfEarningsPerShareAmount	us-gaap_	xbrli:sharesItemType	na	duration	3,884	3,365	4,371	3,419
Shares of common stock subject to outstanding warrants	us-gaap_AntidilutiveSecuritiesExcludedFromComputationOfEarningsPerShareByAntidilutiveSecuritiesAxis=us-gaap_WarrantMember		na						
Antidilutive shares excluded from diluted net loss per share	us-gaap_EarningsPerShareBasicAndDilutedOtherDisclosuresAbstract	us-gaap_	xbrli:stringItemType	na	duration				
Total shares of common stock equivalents (in shares)	us-gaap_AntidilutiveSecuritiesExcludedFromComputationOfEarningsPerShareAmount	us-gaap_	xbrli:sharesItemType	na	duration	0	330	36	396
Shares of common stock subject to outstanding RSUs and PRSUs	us-gaap_AntidilutiveSecuritiesExcludedFromComputationOfEarningsPerShareByAntidilutiveSecuritiesAxis=nvta_RSUsAndPRSUsMember		na						
Antidilutive shares excluded from diluted net loss per share	us-gaap_EarningsPerShareBasicAndDilutedOtherDisclosuresAbstract	us-gaap_	xbrli:stringItemType	na	duration				
Total shares of common stock equivalents (in shares)	us-gaap_AntidilutiveSecuritiesExcludedFromComputationOfEarningsPerShareAmount	us-gaap_	xbrli:sharesItemType	na	duration	8,769	7,331	7,730	7,534
Shares of common stock pursuant to ESPP	us-gaap_AntidilutiveSecuritiesExcludedFromComputationOfEarningsPerShareByAntidilutiveSecuritiesAxis=nvta_EmployeeStockPurchasePlan2015Member		na						
Antidilutive shares excluded from diluted net loss per share	us-gaap_EarningsPerShareBasicAndDilutedOtherDisclosuresAbstract	us-gaap_	xbrli:stringItemType	na	duration				
Total shares of common stock equivalents (in shares)	us-gaap_AntidilutiveSecuritiesExcludedFromComputationOfEarningsPerShareAmount	us-gaap_	xbrli:sharesItemType	na	duration	368	312	304	316
Shares of common stock underlying Series A convertible preferred stock	us-gaap_AntidilutiveSecuritiesExcludedFromComputationOfEarningsPerShareByAntidilutiveSecuritiesAxis=nvta_SeriesAConvertiblePreferredStockMember		na						
Antidilutive shares excluded from diluted net loss per share	us-gaap_EarningsPerShareBasicAndDilutedOtherDisclosuresAbstract	us-gaap_	xbrli:stringItemType	na	duration				
Total shares of common stock equivalents (in shares)	us-gaap_AntidilutiveSecuritiesExcludedFromComputationOfEarningsPerShareAmount	us-gaap_	xbrli:sharesItemType	na	duration	125	125	125	125
Shares of common stock subject to convertible senior notes conversion	us-gaap_AntidilutiveSecuritiesExcludedFromComputationOfEarningsPerShareByAntidilutiveSecuritiesAxis=us-gaap_ConvertibleDebtSecuritiesMember		na						
Antidilutive shares excluded from diluted net loss per share	us-gaap_EarningsPerShareBasicAndDilutedOtherDisclosuresAbstract	us-gaap_	xbrli:stringItemType	na	duration				
Total shares of common stock equivalents (in shares)	us-gaap_AntidilutiveSecuritiesExcludedFromComputationOfEarningsPerShareAmount	us-gaap_	xbrli:sharesItemType	na	duration	38,403	8,074	38,403	8,074

+ References + Details

Cover - Geographic information - Schedule of revenue by country (Details)

Geographic information - Schedule of revenue by country (Details) - USD ($) $ in Thousands	XBRL Details					3 Months Ended		9 Months Ended	
	XBRL Tag Name	XBRL Prefix	Data Type	Balance Type	Period Type	Sep. 30, 2021	Sep. 30, 2020	Sep. 30, 2021	Sep. 30, 2020
Geographic information	us-gaap_RevenuesFromExternalCustomersAndLongLivedAssetsLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 114,395	$ 68,728	$ 334,328	$ 179,167
United States	srt_StatementGeographicalAxis=country_US		na						
Geographic information	us-gaap_RevenuesFromExternalCustomersAndLongLivedAssetsLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	100,957	64,322	293,868	167,462
Rest of world	srt_StatementGeographicalAxis=nvta_RestOfWorldMember		na						
Geographic information	us-gaap_RevenuesFromExternalCustomersAndLongLivedAssetsLineItems	us-gaap_	xbrli:stringItemType	na	duration				
Total revenue	us-gaap_RevenueFromContractWithCustomerExcludingAssessedTax	us-gaap_	xbrli:monetaryItemType	credit	duration	$ 13,438	$ 4,406	$ 40,460	$ 11,705

+ References + Details

Exhibit No. 4

From: Leach, Robert (USACAN) <Robert.Leach@usdoj.gov>
Sent: Thursday, March 31, 2022 9:58 AM
To: McCafferty, Molly
Cc: Coopersmith, Jeffrey; Walsh, Amy; Cazares, Stephen; Schenk, Jeffrey (USACAN); Bostic, John (USACAN); Volkar, Kelly (USACAN)
Subject: FW: U.S. v. Balwani - Letter from J. Coopersmith

Dear Counsel,

Thank you for your letter. The subpoena referenced in Invitae Corporation's SEC filing is not discoverable under Rule 16, *Brady*, *Jencks*, or *Giglio*. To the best of our knowledge, the United States Attorney's Office for the District of Massachusetts has no documents from the time period of Dr. Rosendorff's employment at Invitae. We also do not believe "documentation related to this subpoena—including, but not limited to, . . . documents produced in response to the subpoena" are discoverable under Rule 16, *Brady*, *Jencks*, or *Giglio*.

Best regards,
Bob

From: McCafferty, Molly <mmccafferty@orrick.com>
Sent: Friday, March 25, 2022 4:36 PM
To: Bostic, John (USACAN) <jbostic@usa.doj.gov>; Schenk, Jeffrey (USACAN) <JSchenk@usa.doj.gov>; Leach, Robert (USACAN) <RLeach@usa.doj.gov>; Volkar, Kelly (USACAN) <KVolkar@usa.doj.gov>
Cc: Coopersmith, Jeffrey <jcoopersmith@orrick.com>; Walsh, Amy <awalsh@orrick.com>; Cazares, Stephen <scazares@orrick.com>
Subject: [EXTERNAL] U.S. v. Balwani - Letter from J. Coopersmith

Counsel,

Please see the attached correspondence.

Best,

Molly McCafferty
Managing Associate
Pronouns: she/her/hers

Orrick
San Francisco
T +1.415.773.4240
mmccafferty@orrick.com

Exhibit No. 5

United States Department of Justice

THE UNITED STATES ATTORNEY'S OFFICE
NORTHERN DISTRICT of CALIFORNIA

U.S. Attorneys » Northern District of California » News

Department of Justice

U.S. Attorney's Office

Northern District of California

FOR IMMEDIATE RELEASE Thursday, March 18, 2021

uBiome Co-Founders Charged With Federal Securities, Health Care Fraud Conspiracies

Indictment Alleges Former Co-CEOs Defrauded Health Insurance Providers and Investors In Schemes Related to Clinical Gut and Vaginal Microbiome Tests and Capital Fundraises

SAN FRANCISCO – A federal grand jury handed down a 33-page indictment today charging Zachary Schulz Apte and Jessica Sunshine Richman with multiple federal crimes including conspiracy to commit securities fraud, conspiracy to commit health care fraud, money laundering, and related offenses in connection with alleged schemes to defraud health insurance providers and investors raise to capital for now-bankrupt microbiome testing company uBiome.

The announcement was made by Acting U.S. Attorney Stephanie M. Hinds, Federal Bureau of Investigation Special Agent in Charge Craig D. Fair, U.S. Postal Inspection Service (USPIS) Inspector in Charge Rafael Nuñez; U.S. Department of Health and Human Services Office of the Inspector General (HHS-OIG) Special Agent in Charge Steven J. Ryan; Defense Criminal Investigative Service (DCIS) Western Field Office Special Agent in Charge Bryan D. Denny; U.S. Department of Veterans Affairs, Office of Inspector General (VA OIG) Special Agent in Charge is Jason P. Root; Amtrak Office of the Inspector General Special Agent In Charge, Western Field Office, Thomas M. Hopkins; Office of Personnel Management Office of Inspector General (OPM-OIG) Deputy Inspector General Performing the Duties of the Inspector General Norbert E. Vint.

According to the indictment, Apte, 36, and Richman, 46, both of whom resided in San Francisco at relevant times, co-founded uBiome in October 2012. Initially, uBiome offered a direct-to-consumer service, called "Gut Explorer," which allowed an individual to submit a fecal sample that uBiome would analyze in its laboratory and produce a report comparing the customer's microbiome to the microbiomes of others who had submitted fecal samples to uBiome, all for less than $100. The indictment describes how the defendants eventually expanded uBiome's business model to include development and marketing of "clinical" tests regarding the gut and vaginal microbiomes, which tests would ostensibly be used by medical professionals to make medical decisions and as to which uBiome would seek reimbursement from health insurance providers in amounts up to nearly $3,000. The indictment alleges that Apte's and Richman's efforts to have uBiome develop clinical tests that could be billed to insurance companies were intended to

attract large-scale venture capital investment. By late 2015, shortly before it raised millions of dollars in its "Series B" fundraising round, uBiome began to market a "clinical" version of a test. Thereafter, the indictment alleges that Apte and Richman caused uBiome to employ various methods to secure health care provider orders for its clinical gut test and clinical vaginal test, including by having its Chief Medical Officer review test requests from customers and endeavoring to build a network of health care providers external to uBiome.

"The innovation that emerges from our Bay Area companies is unparalleled," said Acting U.S. Attorney Hinds, "but all innovation must exist within the boundaries of the law. Today's indictment alleges that in their efforts to move fast to drive business and investment capital to their microbiome start up, defendants turned a blind eye to compliance and pursued at all costs a path designed to bring the greatest investment in their company. The indictment alleges defendants bilked insurance providers with fraudulent reimbursement requests, a practice that inevitably would result in higher premiums for us all. Further, defendants cashed out on the investment that flowed into the company to benefit themselves. Today's indictment is a cautionary tale about the importance of robust compliance programs rather than lip service, and the importance of honesty with investors."

"This was the result of a very complex investigation conducted by the FBI and our federal and state partners," said FBI Special Agent in Charge Fair. "This indictment illustrates that the heavily regulated healthcare industry does not lend itself to a 'move fast and break things' approach, but rather to an approach of compliance and accountability."

"The United States Postal Inspection Service has a long history of successfully investigating complex fraud cases," said USPIS Inspector in Charge Nuñez. "Anyone who engages in deceptive practices should know they will not go undetected and will be held accountable. The collaborative investigative work on this case conducted by Postal Inspectors, our law enforcement partners, and the United States Attorney's Office illustrates our efforts to protect American consumers and businesses."

"The announced indictment is a crucial step forward in holding accountable those who, among other things, allegedly engaged in fraudulent schemes against TRICARE, the Department of Defense's healthcare system for military members and their families," said DCIS Special Agent in Charge Denny. "DCIS will continue to work with its law enforcement partners to see this matter through in order to protect the best interests of the Department of Defense and the American public."

"This indictment demonstrates the VA OIG's unwavering commitment to safeguard the integrity of the programs that support our nation's veterans and their families" said VA OIG Special Agent in Charge Root.

"We are very proud of this well-coordinated, joint effort—a true partnership between the U.S. Attorney's Office and multiple investigative agencies like Amtrak's Office of Inspector General," said Amtrak OIG Special Agent in Charge Hopkins. "Because of this joint effort and efforts like it, we continue to achieve success across the country in bringing justice to those who target Amtrak's health care plan, its employees and their dependents."

"The OPM OIG is committed to investigating unscrupulous providers that take advantage of the system and defraud the American taxpayer," said OPM OIG Deputy Inspector General Vint.

The indictment describes how the defendants ultimately adopted several fraudulent practices with respect to its clinical tests. Specifically, according to the indictment, the defendants developed, implemented, and oversaw practices designed to deceive approving health care providers and reimbursing insurance providers regarding tests that were not validated and not medically necessary. Further, the indictment alleges the defendants falsified documents and lied about and concealed material facts when insurance providers asked questions to which truthful answers would reveal the fraudulent nature of uBiome's billing model. The

indictment alleges such practices included (1) fraudulently submitting reimbursement claims for re-tests or re-sequencings of archived samples (referred to internally at uBiome as “upgrades”); (2) utilizing a captive network of doctors and other health care providers who fraudulently were given partial and misleading information about the test requests they were reviewing; (3) fraudulently submitting reimbursement claims with respect to tests that had not been validated under applicable federal standards and/or for which patient test results had not yet been released; (4) manipulating dates of service to conceal uBiome’s actual testing and marketing practices from insurance providers, and to maximize billings; (5) fraudulently not charging patients for patient responsibility required by insurers, and instead, in some cases, incentivizing them with gift cards, and then making false or misleading statements about, or concealing, those practices from insurance providers; and (6) falsifying documents, using the identity of doctors and other health care providers without their knowledge or authorization, and lying to insurance providers in response to requests for information, overpayment notifications, requests for recoupment of billings, denials of reimbursement requests, or audits investigating uBiome’s billing practices. The indictment alleges that, between 2015 and 2019, uBiome submitted more than $300 million in reimbursement claims to private and public health insurers. Of these reimbursement claims, uBiome was paid more than $35 million.

The indictment also includes allegations that defendants oversaw an effort to deceive and mislead investors about various aspects of uBiome’s business during its Series B and Series C fundraising rounds, which occurred primarily in 2016 and 2018, respectively. Specifically, the indictment alleges defendant misled investors about (1) the success of uBiome’s business model in terms of revenues and reimbursement rates; (2) the threats to future revenues represented by uBiome’s failure to collect patient responsibility, marketing of upgrades, and reliance a captive group of health care providers to generate orders; and (3) the lack of clinical utility and acceptance in the medical community of uBiome’s tests. The indictment alleges that the defendants failed to disclose to investors, and otherwise concealed from investors, that “not only were insurance providers’ questions about and responses to uBiome’s billing practices calling uBiome’s entire business model into question, but [defendants] had had to falsify documents and lie to insurance providers in order to attempt to keep them at bay.” The indictment alleges that Apte and Richman induced investors to invest more than $64 million in uBiome stock during the Series B and Series C fundraising rounds and, furthermore, that Apte and Richman together sold investors more than $12 million of their personal uBiome during those rounds.

In addition to these charges, the indictment contains allegations that defendants engaged in aggravated identity theft and engaging in transactions with the proceeds of the specified unlawful activities of wire fraud and securities fraud (i.e., money laundering). With respect to the identity theft charges, the indictment provides examples of how defendants used the names and personal information of various health care providers to create documents for submission to health insurance companies with respect to certain uBiome customers during and in relation to the conspiracy and scheme to defraud those insurers. With respect to money laundering, the indictment alleges Apte used more than $10,000 of proceeds of the scheme to defraud investors to make a $2,250,000 payment ostensibly to a law firm for a retainer and to deposit $500,000 into a bank account. Also with respect to money laundering, the indictment alleges Richman used more than $10,000 of proceeds of the scheme to defraud investors to make payments related to real property in Washington State and Florida, to purchase an annuity from a life insurance company, to pay a law firm $2,000,000 ostensibly for a legal retainer, and to transfer funds in the amount of $900,000 intended as partial payment for the purchase of a residence in south Florida.

In sum, the defendants are charged with the following crimes and face the following maximum penalties:

Offense	Statute	Maximum Statutory Penalty (per count)

Offense	Statute	Maximum Statutory Penalty (per count)
Conspiracy to Commit Health Care Fraud (one count, each defendant)	18 U.S.C. § 1349	20 years
Health Care Fraud (14 counts, each defendant)	18 U.S.C. § 1347	20 years
Aggravated Identity Theft and Aiding and Abetting (six counts, each defendant)	18 U.S.C. § 1028A & 2	Two years, consecutive to underlying sentence
Conspiracy to Commit Wire Fraud and Securities Fraud (one count, each defendant)	18 U.S.C. § 371	5 years
Wire Fraud and Aiding and Abetting (10 counts, each defendant)	18 U.S.C. § 1343 & 2	20 years
Fraud in Connection with the Purchase and Sale of Securities (nine counts, each defendant)	15 U.S.C. §§ 78j(b), 78ff; 17 C.F.R. § 240.10b-5; 18 U.S.C. § 2	20 years
Engaging in Monetary Transactions with Proceeds of Specified Unlawful Activity (Apte, two counts; Richman, four counts)	18 U.S.C. § 1957	10 years

The court may order additional terms of supervised release, as well as additional monetary penalties and restitution. However, any sentence following conviction would be imposed by the court only after consideration of the U.S. Sentencing Guidelines and the federal statute governing the imposition of a sentence, 18 U.S.C. § 3553.

An indictment merely alleges that crimes have been committed, and defendants are presumed innocent until proven guilty beyond a reasonable doubt.

The defendants' initial federal court appearances have not yet been scheduled.

The case is being prosecuted by the Special Prosecutions Section of the U.S. Attorney's Office for the Northern District of California. The prosecution is the result of an investigation by the FBI, USPIS, HHS-OIG, DCIS, VA-OIG, Amtrak-OIG; OPM-OIG; and the U.S. Department of Labor, Employee Benefits Security Administration, with assistance from the California Department of Justice Division of Medi-Cal Fraud & Elder Abuse and the California Department of Insurance. The U.S. Attorney's Office and all the federal law enforcement agencies also thank the San Francisco Regional Office of the Securities and Exchange Commission (SEC). The SEC conducted a parallel investigation that was also announced today.

Attachment(s):
Download uBiome indictment

Component(s):
USAO - California, Northern

Updated March 18, 2021

Exhibit No. 6

State of California—Health and Human Services Agency
California Department of Public Health

TOMÁS J. ARAGÓN, M.D., Dr.P.H
Director and State Public Health Officer

GAVIN NEWSOM
Governor

IMPORTANT NOTICE – ACTION NECESSARY

(Confirmation of successful transmission by email constitutes proof of receipt of this letter)

February 19, 2021

Adam Rosendorff, MD
CLIA Laboratory Director
CDPH Branch Laboratory
28454 Livingston Ave
Valencia, CA 91355

Timothy Bow
Emergency Procurement Officer, Owner Representative
California Department of Public Health
850 Marina Bay Parkway, Bldg. P
Richmond, CA 94804

STATE: CPH889339
CLIA: 05D2197416

PUBLIC HEALTH LABORATORY STATE INSPECTION-CONDITION LEVEL DEFICIENCIES – IMMEDIATE JEOPARDY

Dear Laboratory Director/Owner(s):

An inspection of your laboratory was conducted on December 8, 2020, and December 9, 2020, and on December 16, 2020, by Elsa Eleco, Examiner III , Elaine Flores, Examiner II, Catherine Tolentino, Examiner II, and Jinong Feng, Examiner I, representatives of the California Department of Public Health (the Department), Laboratory Field Services. This routine inspection concluded on February 17, 2021.

As a result of that inspection, Department examiners determined that your laboratory is **not** in compliance with the requirements specified in the Health and Safety Code (HSC) section 101160 and/or California Code of Regulations (CCR), title 17, sections 1078 and 1083.

In order for a public health laboratory to perform testing under the Health and Safety Code subsections 101160 (a) – (b), it must comply with all federal CLIA requirements. These requirements are found in section 353 of the Public Health Service Act (42 U.S.C. 263a) and 42 Code of Federal Regulations, Part 493 (42 CFR 493). Compliance with these regulations is a condition of certification for the State Public Health Laboratory Certification program.

As a result of that inspection, Department examiners determined that your laboratory is **not** in compliance with all of the Conditions required for certification in the State Public Health Laboratory Certification program. In addition, the examiners determined that the deficient practices of your laboratory pose immediate jeopardy to patient health and safety. (Immediate jeopardy is defined in the California Code of Regulations (CCR) as a situation in which immediate corrective action is necessary because the laboratory's non-compliance with one or more Condition-level requirements has already caused, is causing, or is likely to cause, at any time, serious injury or harm, or death, to individuals served by the laboratory or to the health and safety of the general public.) Specifically, the laboratory did not meet the following Conditions:

D3000 - 42 CFR 493.1100 Condition: Facility administration
D5300 - 42 CFR 493.1240 Condition: Preanalytic systems
D5400 - 42 CFR 493.1250 Condition: Analytic systems
D5800 - 42 CFR 493.1290 Condition: Postanalytic systems
D6076 - 42 CFR 493.1441 Condition: Laboratories performing high complexity testing; laboratory director

In addition, other standards were also found to be not met. Enclosed is Form 2567, Statement of Deficiencies, listing all the deficiencies found during the survey.

Because of the seriousness of these deficiencies, your laboratory no longer meets the requirements to perform testing under the Health and Safety Code. Based on the finding of immediate jeopardy, this office has contacted the Centers for Medicare & Medicaid Services (CMS), and has notified them of our determination of non-compliance.

When a laboratory's deficiencies pose immediate jeopardy, the Department requires the laboratory to take immediate action to remove the jeopardy and come into Condition-level compliance.

Failure to meet Condition-level requirements and/or failure to return the allegation of compliance and accompanying evidence within the stated time period may result in sanctions against the public health laboratory's certificate, laboratory director, and owners, suspension from the Medi-Cal and/or Medicaid program in addition to civil money penalties, and recovery of costs associated with the investigation:

1. Civil money penalties for each day of noncompliance or per violation for a condition level deficiency that poses immediate jeopardy, to the extent permitted by law.

2. Exclusion from Ownership or Operation (Title 17 CCR § 1065.5)

3. Revocation and/or suspension of the public health certificate (Title 17 CCR § 1065.5)

Please be advised that sanctions and/or enforcement actions can be rescinded only when compliance is verified. Please also be advised that due to the potential significant hazard to the public health and safety posed by the deficiencies identified, sanctions may become effective 21 calendar days from the date of this letter.

You have 10 CALENDAR DAYS from the date of this notice to provide this office (at the address shown at the end of this notice), with a credible allegation of compliance and acceptable evidence documenting that the immediate jeopardy has been removed and that action has been taken to correct all of the Condition-level deficiencies in question.

You are directed to document your allegation of compliance using the enclosed State Form 2567, Statement of Deficiencies, in the columns labeled "Provider Plan of Correction" and "Completion Date" located on the right side of the form, keying your responses to the deficiencies on the left. The laboratory director must sign, date, and return the completed State Form 2567 documented with a credible allegation of compliance to our office WITHIN 10 CALENDAR DAYS from the date of this notice. You must also submit documented evidence that verifies that the corrections were made.

For your information, a credible allegation of compliance is a statement or documentation that is:

1. Made by a representative of a laboratory with a history of having maintained a commitment to compliance and taking corrective action when required;

2. Realistic in terms of the possibility of the corrective action being accomplished between the date of the survey and the date of the allegation; and

3. Indicates resolution of the problems.

In addition, acceptable evidence of correction must include:

1. Documentation showing what corrective action(s) have been taken for patients found to have been affected by the deficient practice;

2. How the laboratory has identified other patients having the potential to be affected by the same deficient practice and what corrective action(s) has been taken;

3. What measure has been put into place or what systemic changes you have made to ensure that the deficient practice does not recur; and

4. How the corrective action(s) are being monitored to ensure the deficient practice does not recur.

If you submit a credible allegation of compliance and acceptable evidence that your laboratory has removed jeopardy and come into Condition-level compliance, postmarked by March 1, 2021, and we are able to verify compliance with all CLIA requirements through a follow-up survey, sanctions will not be imposed. If your laboratory does not submit a credible allegation of compliance and acceptable evidence of correction, we will not conduct a follow-up survey. (Your allegation of compliance will be included in the public record of the inspection.) Electronic submission is acceptable.

Please send all correspondence to the following address:

CDPH-Laboratory Field Services
320 West 4th Street, Suite 890
Los Angeles, CA 90013
Attention: Catherine Tolentino, Examiner II

If you have any questions regarding this letter, you may contact me at 213-422-5703 or via email at Catherine.Tolentino@cdph.ca.gov.

Sincerely,

Robert J. Thomas for
Catherine Tolentino

Catherine Tolentino
Examiner II

Enclosure

cc: Robert J. Thomas
Branch Chief

Elsa Eleco
Section Chief, On-Site Licensing Inspections

Exhibit No. 7

State of California—Health and Human Services Agency
California Department of Public Health

TOMÁS J. ARAGÓN, M.D., Dr.P.H
Director and State Public Health Officer

GAVIN NEWSOM
Governor

IMPORTANT NOTICE – ACTION NECESSARY

(Confirmation of successful transmission by email constitute proof of receipt of this letter)

April 23, 2021

Adam Rosendorff, MD
CLIA Laboratory Director
CDPH Branch Laboratory
28454 Livingston Ave
Valencia, CA 91355

Timothy Bow
Emergency Procurement Officer, Owner Representative
California Department of Public Health
850 Marina Bay Parkway, Bldg P
Richmond, CA 94804

STATE: CPH889339
CLIA: 05D2197416

PUBLIC HEALTH LABORATORY STATE INSPECTION - CONDITION LEVEL DEFICIENCIES – IMMEDIATE JEOPARDY

Dear Laboratory Director/Owner(s):

In order for a public health laboratory to perform testing under the Health and Safety Code subsections 101160 (a) - (b), it must comply with all federal CLIA requirements. These requirements are found in section 353 of the Public Health Service Act (42 U.S.C. 263a) and 42 Code of Federal Regulations, Part 493 (42 CFR 493). Compliance with these regulations is a condition of certification for the State Public Health Laboratory Certification program.

An inspection of your laboratory was conducted on February 7, 2021, by Elsa Eleco, Examiner III, and Catherine Tolentino, Examiner II, representatives of the California Department of Public Health (the Department), Laboratory Field Services. This complaint inspection concluded on April 22, 2021.

As a result of that inspection, Department examiners determined that your laboratory is not in compliance with the requirements specified in the Health and Safety Code (HSC) section 101160 and/or California Code of Regulations (CCR), title 17, sections 1078 and 1083.

Department examiners also determined that your laboratory is not in compliance with all of the Conditions required for certification in the State Public Health Laboratory Certification program. In addition, the examiners determined that the deficient practices of your laboratory pose immediate jeopardy to patient health and safety. (Immediate jeopardy is defined in the California Code of Regulations (CCR) as a situation in which immediate corrective action is necessary because the laboratory's non-compliance with one or more Condition-level requirements has already caused, is causing, or is likely to cause, at any time, serious injury or harm, or death, to individuals served by the laboratory or to the health and safety of the general public.) Specifically, the laboratory did not meet the following Conditions:

D5200 - 42 CFR 493.1230 Condition: General Laboratory Systems
D5400 - 42 CFR 493.1250 Condition: Analytic systems
D5800 - 42 CFR 493.1290 Condition: Postanalytic systems
D6076 - 42 CFR 493.1441 Condition: Laboratories performing high complexity testing; laboratory director

In addition, other standards were also found to be not met. Enclosed is Form 2567, Statement of Deficiencies, listing all the deficiencies found during the survey.

Because of the seriousness of these deficiencies, your laboratory no longer meets the requirements to perform testing under the Health and Safety Code. Based on the finding of immediate jeopardy, this office has contacted the Centers for Medicare & Medicaid Services (CMS), and has notified them of our determination of non-compliance.

When a laboratory's deficiencies pose immediate jeopardy, the Department requires the laboratory to take immediate action to remove the jeopardy and come into Condition-level compliance.

Failure to meet Condition-level requirements and/or failure to return the allegation of compliance and accompanying evidence within the stated time period may result in sanctions against the public health laboratory's certificate, laboratory director, and owners, suspension from the Medi-Cal and/or Medicaid program in addition to civil money penalties, and recovery of costs associated with the investigation:

1. Civil money penalties for each day of noncompliance or per violation for a condition level deficiency that poses immediate jeopardy, to the extent permitted by law.

2. Exclusion from ownership or operation (Title 17 CCR § 1065.5)

3. Revocation and/or suspension of the public health certificate (Title 17 CCR § 1065.5)

Please be advised that sanctions and/or enforcement actions can be rescinded only when compliance is verified. Please also be advised that due to the potential significant hazard to the public health and safety posed by the deficiencies identified, sanctions may become effective 21 calendar days from the date of this letter.

You have 10 CALENDAR DAYS from the date of this notice to provide this office with a credible allegation of compliance and acceptable evidence documenting that the immediate jeopardy has been removed and that action has been taken to correct all of the Condition-level deficiencies in question.

You are directed to document your allegation of compliance using the enclosed State Form 2567, Statement of Deficiencies, in the columns labeled "Provider Plan of Correction" and "Completion Date" located on the right side of the form, keying your responses to the deficiencies on the left. The laboratory director must sign, date, and return the completed State Form 2567 documented with a credible allegation of compliance to our office, at the address shown at the end of this notice, WITHIN 10 CALENDAR DAYS from the date of this notice. Electronic submission is acceptable. You must also submit documented evidence that verifies that the corrections were made.

For your information, a credible allegation of compliance is a statement or documentation that is:

1. Made by a representative of a laboratory with a history of having maintained a commitment to compliance and taking corrective action when required;

2. Realistic in terms of the possibility of the corrective action being accomplished between the date of the survey and the date of the allegation; and

3. Indicates resolution of the problems.

In addition, acceptable evidence of correction must include:

1. Documentation showing what corrective action(s) the laboratory has taken for patients found to have been affected by the deficient practice;

2. How the laboratory has identified other patients having the potential to be affected by the same deficient practice and what corrective action(s) the laboratory has taken;

3. What measure the laboratory has put into place or what systemic changes the laboratory has made to ensure that the deficient practice does not recur; and

4. How the laboratory is monitoring corrective action(s) to ensure the deficient practice does not recur.

If you submit a credible allegation of compliance and acceptable evidence that your laboratory has removed jeopardy and come into Condition-level compliance, postmarked by May 3, 2021, and we are able to verify compliance with all CLIA requirements through a follow-up survey, we will not impose sanctions. If your laboratory does not submit a credible allegation of compliance and acceptable evidence of correction, we will not conduct a follow-up survey. (Your allegation of compliance will be included in the public record of the inspection.)

Please send all correspondence to the following address:

CDPH-Laboratory Field Services
320 West 4th Street, Suite 890
Los Angeles, CA 90013
Attention: Catherine Tolentino, Examiner II

If you have any questions regarding this letter, you may contact me at 213-422-5703 or via email at Catherine.Tolentino@cdph.ca.gov.

Sincerely,

ctolentino

Catherine Tolentino
Examiner II

Enclosure

cc: Robert J. Thomas
Branch Chief

Elsa Eleco
Section Chief, On-Site Licensing

Exhibit No. 8

DEPARTMENT OF HEALTH & HUMAN SERVICES
Centers for Medicare & Medicaid Services
Division of Clinical Laboratory Improvement & Quality (DCLIQ)
Western and Central Operations Branch - San Francisco Location
(Denver, Kansas City, San Francisco, and Seattle)
90 7th Street, Suite 5-300 (5W)
San Francisco, CA 94103-6707

CMS
CENTERS FOR MEDICARE & MEDICAID SERVICES

Refer to: DCLIQ - GKY

IMPORTANT NOTICE – PLEASE READ CAREFULLY

Sent via facsimile to (661) 402-6485 and first class mail.
(Confirmation of successful facsimile transmission or e-mail constitutes proof of receipt.)

May 6, 2021

Adam Rosendorff, M.D., Director
CDPH Branch Laboratory
28454 Livingston Avenue
Valencia, CA 91355

CLIA Number: 05D2197416

RE: NOTICE OF CONDITION-LEVEL DEFICIENCIES – IMMEDIATE JEOPARDY

REQUEST FOR ALLEGATION OF COMPLIANCE AND EVIDENCE OF CORRECTION

Dear Dr. Rosendorff:

In order for a laboratory to perform testing under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), Public Law 100-578, it must comply with all CLIA requirements. These requirements are found in section 353 of the Public Health Service Act (42 U.S.C. § 263a) and Title 42 of the Code of Federal Regulations, Part 493 (42 C.F.R. § 493). Laboratories are required to be in compliance with the applicable regulations. Compliance with these regulations is a condition of certification for the CLIA program.

Representatives from the Centers for Medicare & Medicaid Services (CMS) San Francisco Location conducted an initial certification and complaint survey of your laboratory that was completed on May 6, 2021. As a result of the survey, it was determined that your facility is not in compliance with all of the Conditions required for certification in the CLIA program. In addition, based on the Condition-level requirements at 42 C.F.R. § 493.1250, Analytic Systems and 42 C.F.R. § 493.1441, Laboratories Performing High Complexity Testing; Laboratory Director, it was determined that the deficient practices of the laboratory pose immediate jeopardy to patient health and safety. (Immediate jeopardy is defined by the CLIA regulations as a situation in which immediate corrective action is necessary because the laboratory's non-compliance with one or more Condition-level requirements has already caused, is causing, or is likely to cause, at any time, serious injury or harm, or death, to individuals served by the laboratory or to the health and safety of the general public.) Specifically, the following Conditions were not met:

D5400 - 42 C.F.R. § 493.1250 Condition: Analytic Systems; and,
D6076 - 42 C.F.R. § 493.1441 Condition: Laboratories performing high complexity testing; laboratory director

In addition, the laboratory was not in compliance with various CLIA Standards. Enclosed is Form CMS-2567, Statement of Deficiencies, listing all the deficiencies found during the survey.

When a laboratory's deficiencies pose immediate jeopardy, CMS requires the laboratory to take immediate action to remove the jeopardy and come into Condition-level compliance. Laboratories that do not meet the Condition-level requirements of CLIA may not be certified to perform laboratory testing under the CLIA program. You must take steps to bring any unmet Conditions and associated Standards into compliance immediately.

Please be advised that sanctions and/or enforcement actions can be rescinded only when compliance is verified.

You are required to respond WITHIN 10 CALENDAR DAYS OF RECEIPT of this notice. You are directed to document your credible allegation of compliance using the enclosed Form CMS-2567, Statement of Deficiencies, or in a separate document attachment. If using the Form CMS-2567 for each finding, complete the columns labeled "Provider Plan of Correction" and "Completion Date" located on the right side of the form, keying your responses to the deficiencies on the left. The laboratory director must sign, date and return the completed Form CMS-2567 or separate document containing your documentation of a credible allegation of compliance to our office WITHIN 10 CALENDAR DAYS from the date of this notice. You must also submit documented evidence verifying the laboratory has made all corrections noted in the credible allegation of compliance. Your allegation of compliance will be included in the public record of the inspection. We may conduct a follow-up, onsite survey to verify the corrections.

A credible allegation of compliance is a statement or documentation that is:

1) Made by a representative of a laboratory with a history of having maintained a commitment to compliance and taking corrective action when required;

2) Realistic in terms of the possibility of the corrective action being accomplished between the date of the survey and the date of the allegation; and,

3) Indicates resolution of the problems.

For your information, acceptable evidence of correction must include:

1) Documentation showing what corrective action(s) have been taken for patients found to have been affected by the deficient practice;

2) How the laboratory has identified other patients having the potential to be affected by the same deficient practice and what corrective action(s) has been taken;

3) What measure has been put into place or what systemic changes you have made to ensure that the deficient practice does not recur; and,

4) How the corrective action(s) are being monitored to ensure the deficient practice does not recur.

If you do not submit a credible allegation of compliance and acceptable evidence of correction, or if you submit an allegation of compliance that is determined to be credible and are found to be out of compliance with any CLIA Condition-level requirements at the time of the follow-up visit, we may impose sanctions. These may include alternative sanctions (Civil Money Penalty per 42 C.F.R. § 493.1834, Directed Plan of Correction per 42 C.F.R. § 493.1832, State Onsite Monitoring per 42 C.F.R. § 493.1836) and principal sanctions (suspension, limitation and/or revocation of your laboratory's CLIA certificate per 42 C.F.R. § 493.1840, and cancellation of your laboratory's approval for Medicare payments per 42 C.F.R. § 493.1814).

Please note that surveys take an overview of the laboratory, often through random sampling. By its nature, a survey may not find every violation that the laboratory may have committed. It remains the responsibility of the laboratory and its director to ensure that the laboratory is at all times following all CLIA requirements, to identify any problems in the laboratory and take corrective action specific to the problems, and to institute appropriate quality assessment measures to ensure that the deficient practices do not recur.

In addition to the routine CLIA certification surveys, announced or unannounced investigations/surveys may be conducted by CMS or its agent at any time to address complaints or other non-compliance issues. These investigations/surveys may well identify violations that may not have surfaced during a routine survey using random sampling, but for which the laboratory and its director will still be held responsible.

All responses as well as any future correspondence pertaining to this survey should be sent to:

Karen Fuller, Manager
Division of Clinical Laboratory Improvement & Quality (DCLIQ)
Western and Central Operations Branch – San Francisco Office
Centers for Medicare & Medicaid Services
90 7th Street, Suite S-300 (5W)
San Francisco, CA 94103-6707

Please contact Gary Yamamoto by telephone at (415) [redacted] or by e-mail at [redacted]@cms.hhs.gov, or Josh Cohen by telephone at (415) [redacted] or by e-mail at [redacted]@cms.hhs.gov with any questions concerning this letter.

Sincerely,

Karen M. Fuller -S Digitally signed by Karen M. Fuller -S Date: 2021.05.06 12:24:45 -07'00'

Karen Fuller, Manager
Division of Clinical Laboratory Improvement & Quality (DCLIQ)
Western and Central Operations Branch
(Denver, Kansas City, San Francisco, and Seattle)

Enclosure: CMS-2567, Statement of Deficiencies

cc: California Department of Public Health, Laboratory Field Services

Date/Time IJ Template provided to entity: **May 6, 2021 12:00PM**

IJ Component	Yes/No	Preliminary fact analysis which demonstrates when key component exists.
Noncompliance: Has the entity failed to meet one or more federal health, safety, and/or quality regulations? If yes, in the blank space, identify the tag and briefly summarize the issues that lead to the determination that the entity is in noncompliance with the identified requirement. This includes the action(s), error(s), or lack of action, and the extent of the noncompliance (for example, number of cases). Use one IJ template for each tag being considered at IJ level.	Yes	D6076 – Laboratory Director, High Complexity Testing The Laboratory Director failed to ensure that: - Testing systems developed for its SARS-CoV-2 test provided quality laboratory results for all aspects of the testing performed; - Quality Assessment (QA) programs are maintained; - Test systems are functioning properly; and, - Personnel received appropriate training prior to results reporting.
AND		
Serious injury, serious harm, serious impairment or death: Is there evidence that a serious adverse outcome occurred, or a serious adverse outcome is likely as a result of the identified noncompliance? If Yes, in the blank space, briefly summarize the serious adverse outcome, or likely serious adverse outcome to the recipient.	Yes	A serious adverse outcome could occur if inaccurate and unreliable patient test results are reported as a result of non-compliance with 42 C.F.R. § 493.1441 Laboratories Performing High Complexity Testing; Laboratory Director (deficiency tag: D6076).
AND		
Need for Immediate Action: Does the entity need to take immediate action to correct noncompliance that has caused or is likely to cause serious injury, serious harm, serious impairment, or death? If yes, in the blank space, briefly explain why.	Yes	The laboratory must immediately: - Establish test performance specifications for its SARS-CoV-2 test system; - Maintain QA protocols; - Follow maintenance protocols; - Maintain an accurate test records system; and, - Ensure employee training and competency.

Disclaimer: The findings on this IJ Template are preliminary and do not represent an official finding against a Medicare provider or supplier. Form CMS-2567 is the only form that contains official survey finding.

Date/Time IJ Template provided to entity: **May 6, 2021 12:00PM**

IJ Component	Yes/No	Preliminary fact analysis which demonstrates when key component exists.
Noncompliance: Has the entity failed to meet one or more federal health, safety, and/or quality regulations? If yes, in the blank space, identify the tag and briefly summarize the issues that lead to the determination that the entity is in noncompliance with the identified requirement. This includes the action(s), error(s), or lack of action, and the extent of the noncompliance (for example, number of cases). Use one IJ template for each tag being considered at IJ level.	Yes	**D5400 ANALYTIC SYSTEMS** The laboratory failed to: - Establish test performance specifications for its SARS-CoV-2 test system; - Ensure quality control materials meet laboratory criteria for acceptability before reporting a patient SARS-CoV-2 test result; - Ensure employee training and competency; - Follow maintenance protocols; - Maintain an accurate test records system; and, - Maintain Quality Assurance (QA) protocols.
		A
Serious injury, serious harm, serious impairment or death: Is there evidence that a serious adverse outcome occurred, or a serious adverse outcome is likely as a result of the identified noncompliance? If Yes, in the blank space, briefly summarize the serious adverse outcome, or likely serious adverse outcome to the recipient.	Yes	A serious adverse outcome could occur if inaccurate and unreliable patient test results are reported as a result of non-compliance with 42 C.F.R. § 493.1250 Condition: Analytic Systems (deficiency tag: D5400).
		A
Need for Immediate Action: Does the entity need to take immediate action to correct noncompliance that has caused or is likely to cause serious injury, serious harm, serious impairment, or death? If yes, in the blank space, briefly explain why.	Yes	The laboratory must immediately: - Establish test performance specifications for its SARS-CoV-2 test system; - Ensure quality control materials meet laboratory criteria for acceptability before reporting a patient SARS-CoV-2 test result; - Ensure employee training and competency; - Follow maintenance protocols; - Maintain an accurate test records system; and, - Maintain QA protocols.

Disclaimer: The findings on this IJ Template are preliminary and do not represent an official finding against a Medicare provider or supplier. Form CMS-2567 is the only form that contains official survey finding.

Exhibit No. 9

[redacted]

From: Rosendorff, Adam <[redacted]@PERKINELMER.COM>
Sent: Tuesday, June 1, 2021 12:14 PM
To: Flores, Elaine@CDPH <[redacted]@cdph.ca.gov>; Tolentino, Catherine@CDPH <[redacted]@cdph.ca.gov>; Eleco, Elsa@CDPH <[redacted]@cdph.ca.gov>
Subject: Re: Resigning from PerkinElmer and CDPH Branch Laboratory, Valencia

Hello

Please disregard this email.

Adam

Adam Rosendorff, MD
Laboratory Director, CDPH Branch Laboratory, Valencia
Medical Director, PerkinElmer Genomics
Mobile: 617-784-8929
E-mail: adam.rosendorff@perkinelmer.com

From: "Rosendorff, Adam" <[redacted]@PERKINELMER.COM>
Date: Wednesday, May 26, 2021 at 10:17 AM
To: "Flores, Elaine@CDPH" <[redacted]@cdph.ca.gov>, "Tolentino, Catherine@CDPH" <[redacted]@cdph.ca.gov>, "Eleco, Elsa@CDPH" <[redacted]@cdph.ca.gov>
Subject: FW: Resigning from PerkinElmer and CDPH Branch Laboratory, Valencia

Good morning

Please see the email below.

Thank you,

Adam

From: "Rosendorff, Adam" <[redacted]@PERKINELMER.COM>
Date: Wednesday, May 26, 2021 at 10:05 AM
To: "Hegde, Madhuri" <[redacted]@PERKINELMER.COM>, "Dennewitz, LeeAnn" <[redacted]@perkinelmer.com>
Subject: Resigning from PerkinElmer

Hello

I would like to submit my resignation as laboratory director of CDPH Branch Laboratory, Valencia, and as an employee of PerkinElmer, effective two weeks from today.

I have decided to take a job in Northern California to be closer to my daughter.

I will be in shortly to discuss further if needed.

Sincerely,

Adam

Adam Rosendorff, MD
Laboratory Director
CDPH Branch Laboratory, Valencia
(cell) [redacted]